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THE

ILLUSTRATED

DICTIONARY OF GARDENING,

A PRACTICAL AND SCIENTIFIC

Encyclopædia of Horticulture

FOR

GARDENERS AND BOTANISTS.

MISSOURI
BOTANICAL
GARDEN.

EDITED BY

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DIVISION II.—CAR. TO ERI.

1884 to page 481 -
1885 from there on.

PUBLISHED BY

L. UPCOTT GILL, 170, STRAND, LONDON, W.C.

GENERAL AGENT,

A. W. COWAN, 30 AND 31, NEW BRIDGE STREET, LUDGATE CIRCUS, LONDON.

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IT has been suggested, by an eminent Authority, that many readers would be glad to be informed where reliable Illustrations could be found of those Plants which are not figured in this Work. To meet this want, references to the figures in Standard Authorities have been given, the titles of the Works referred to being, for economy of space, abbreviated as follows:

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Caragana—*continued.*

C. pygmæa (pigmy). *fl.* yellow; pedicels solitary. April. *l.* with two pairs linear, glabrous leaflets, approximating at the top of the very short petiole; stipules and petioles spinescent. *h.* 1ft. to 3ft. Siberia, 1751. Shrub. (B. R. 1021.)

C. spinosa (spiny).* *fl.* yellow, solitary, almost sessile. April, May. *l.* with two to four pairs of cuneate-linear, glabrous leaflets; stipules small, spinose; adult petioles permanent, strong, and spinose. *h.* 4ft. to 6ft. Siberia, 1775. An excellent shrub for forming impenetrable hedges, on account of its long branches and strong thorns.

CARAGUATA (its South American name). ORD. *Bromeliaceæ.* Stove epiphytes, allied to *Tillandsia.* For culture, *see* **Billbergia.**

C. lingulata (tongue-shaped-leaved). *fl.* white; flower-stalk erect, with numerous large, broadly-lanceolate, brilliant scarlet bracts. *l.* tufted, broad at the base, linear-lanceolate and recurved. *h.* 1½ft. Columbia, 1880.

C. Van Volxemii (Van Volxem's).* *fl.* yellow, in close spikes, protected by crimson bracts. *l.* tufted. *h.* 2ft. to 3ft. Columbia, 1879. (I. H. 326.)

C. Zahnii (Zahn's).* *fl.* pale yellow, in dense oblong compressed panicles; bracts scarlet. May. *l.* linear-ligulate, 1ft. long, yellow, with crimson stripes, the upper part bright crimson; semi-transparent. *h.* 1ft. Chiriqui, 1870. (B. M. 6059.)

CARAIPI. *See* **Moquilea utilis.**

CARAJURA. A red colouring matter, obtained from **Bignonia Chica.**

CARALLIA (*Karalli* is the name of *C. lucida* in the language of the Telingas). SYN. *Barraldeia.* ORD. *Rhizophoreæ.* Stove evergreen glabrous trees, from Madagascar, Tropical Asia, and Australia. Peduncles axillary, trifid, many-flowered. Leaves opposite, entire or serrated, stiffish, shining on the upper surface. In common with all the *Rhizophoreæ*, this genus is very difficult to grow.

C. lanceæfolia (lance-leaved). *fl.*, petals yellow, rather undulated. *l.* oval or oblong, regularly serrated. *h.* 20ft. India, 1820.

CARALLUMA (*C. adscendens* is called *Car-allum* by the Telingas). ORD. *Asclepiadaceæ.* Stove evergreen shrubs, with almost the habit of *Stapelia.* Peduncles solitary, one-flowered, rising from the axils of the teeth. Stems tetragonal, toothed along the angles. For culture, *see* **Stapelia.**

C. adscendens (ascending). *fl.* variegated with purple and yellow, usually drooping; segments of corolla reflexed at the edges, acuminated, glabrous. Branches slender, ascending, each bearing a solitary flower at top. *h.* 1ft. to 2ft. Coromandel, 1804.

C. fimbriata (fimbriate). *fl.* axillary, solitary, sub-campanulate, drooping; segments of corolla falcate at top, with replicate fringed edges; marked with many transverse purple lines, pale yellow beneath, upper part purple. Branches elongated, attenuated. *h.* 6in. Burma, 1829. (L. B. C. 1863.)

CARAMBOLA-TREE. *See* **Averrhoa Carambola.**

CARANA. The gum resin obtained from a species of *Icica.* It is used in medicine for plasters.

CARAPA (*Carapa* is the name of *C. guianensis* in Guiana). ORD. *Meliaceæ.* A small genus of stove trees, natives of the West Indies, Tropical America, and Guinea. Calyx usually of four distinct sepals; corolla of four or five oblong, egg-shaped, spreading petals. Fruit large, and containing numerous seeds. These trees are of economical utility, and probably the only one in cultivation is *C. guianensis.* They succeed well in a mixture of loam and sand. Ripe cuttings will root in sand, under a hand glass, in a moist heat.

C. guianensis (Guiana). November. *fr.* the size of an apple. *l.*, leaflets eight or ten pairs, alternate or opposite, elliptical, oblong, acuminated, coriaceous, shining. *h.* 60ft. Guiana, 1824. (A. G. 387.)

The other species quoted as having been introduced to this country are: *C. guineensis* and *C. moluccensis.*

CARAWAY. *See* **Carum Carvi.**

CARDAMINE (from *Kardamine*, a diminutive of *Kardamon*, Cress, used by Dioscorides). Lady's Smock. Including *Pteroneurum.* ORD. *Cruciferæ.* A genus of hardy, usually smooth herbs. Racemes terminal, bractless. Leaves stalked, entire, lobed, or pinnately cut, usually very different in the same plant. Only the perennial species are worth growing, and these mostly thrive in a damp, shady situation, in any kind of soil. They are easily propagated by divisions, after flowering.

Cardamine—*continued.*

C. asarifolia (Asarum-leaved).* *fl.* white, in close racemes. May, June. *l.* smooth, stalked, cordate-orbicular, somewhat sinuately-toothed. *h.* 1ft. to 1½ft. Mountains of Southern France and Northern Italy, 1710. (B. M. 1735.)

C. bellidifolia (Daisy-leaved). *fl.* white. April. *l.* smooth, thickish; radical ones stalked, ovate, entire; cauline ones few, entire, or somewhat three-lobed, not eared at the base. *h.* 4in. Northern hemisphere. (F. D. 1, 20.)

C. chelidonia (Celandine-like). *fl.*, petals purple, oval. March. *l.* pinnate, rather smooth; segments stalked, ovate, toothed; lower segments pinnate into three or four small segments. *h.* 1ft. South and East Europe, 1739.

C. glauca (glaucous). *fl.* white, in dense racemes. May. *l.* stalked, smooth, glaucous, rather fleshy, pinnate; segments five or nine, oblong, terminal one three-lobed. Stem diffuse, much branched. *h.* 6in. Southern and Eastern Europe, 1824.

C. latifolia (broad-leaved). *fl.* purplish, a little larger than those of *C. pratensis.* June. *l.* large, pinnate, smooth; segments three or seven, rather orbicular, angularly-toothed. *h.* 1ft. to 2ft. Pyrenees, 1710.

C. macrophylla (large-leaved). *fl.* purple, about the size of those of *C. pratensis.* June. *l.* pinnate, somewhat pubescent; segments five, oval-lanceolate, pointed, unequally serrated. Branches of root creeping. *h.* 1ft. to 1½ft. Siberia, 1824.

FIG. 365. CARDAMINE PRATENSIS.

C. pratensis (meadow).* Cuckoo Flower. *fl.* usually pale purple, but sometimes white. Early spring. *l.* pinnate; segments of the radical ones roundish, of the stem ones linear or lanceolate, entire. *h.* 1ft. to 1½ft. Northern Hemisphere (Britain). See Fig. 365. There are numerous varieties of this species, including a very desirable double-flowered one, frequently met with in a wild state.

C. rhomboidea (rhomboid).* *fl.* white, large. Spring. *l.*, root ones round and rather heart-shaped; lower stem-leaves ovate or rhomboid-oblong, somewhat petioled, the upper almost lanceolate, all somewhat angled or sparingly toothed. Stems upright, from a tuberiferous base, simple. United States of America.

C. r. purpurea (purple).* A very pretty variety, with rounder leaves, and the rose-purple flowers appearing earlier than those of the type.

C. rotundifolia (round-leaved). *fl.* white, rather small. Spring. *l.* nearly uniform, roundish. somewhat angled, often cordate at

Cardamine—*continued.*

the base, petioled, the lowest frequently three-lobed, or of three-leaflets. Stems branching, weak or decumbent. Pennsylvania.

C. trifolia (three-leaved).* *fl.*, petals white, with a broad cuneated claw, and a broad, spreading, obovate limb; scape naked. March to May. *l.* smoothish, ternate; segments sessile, rhomboidal-roundish, toothed. Lower branches root-like, creeping. *h.* 6in. Southern Europe, 1629. (B. M. 452.)

CARDIANDRA (from *kardia*, a heart, and *aner, andros*, a man, anther). ORD. *Saxifrageæ*. A half-hardy evergreen shrub. Flowers corymbose; those at the margin of the corymb barren and radiant. For cultivation, *see* **Hydrangea.**

C. alternifolia (alternate-leaved). *fl.* white, lilac. July. *l.* alternate, stalked, oblong-acute, serrated, and without stipules. *h.* 3ft Japan, 1865. (S. Z. F. J. 65, 66.)

CARDINAL FLOWER. *See* **Lobelia cardinalis.**

CARDOON (*Cynara Cardunculus*). This vegetable, is much esteemed on the Continent, but is not cultivated to any large extent in English gardens. A few are, however, generally grown, being especially in demand where French cooks are employed. The ribs or stalks of the leaves, if well blanched and properly cooked, form an excellent dish in winter.

Cultivation. The preparation of the trenches and ground is somewhat similar to that adopted for celery;

FIG. 366. CARDOON.

but the plants grow much larger (see Fig. 366), and require a space of about 2ft. between them, and 6ft. between the rows. Some growers sow a few seeds in the rows at this distance apart, thinning them out to one plant when established. A much better plan is to sow the required number, in small pots, at the end of April, and place them in a cold frame, where the seed will soon germinate. Mice are very fond of the seed, consequently

Cardoon—*continued.*

the frame must be kept close enough to prevent their entry, or the whole will be destroyed. Select the strongest plant in each pot, as they grow, and destroy the others. Plant out before they become pot-bound, in previously prepared trenches that have been well manured, and water plentifully when necessary. Occasional forking or hoeing between the plants, to encourage growth and destroy weeds, will be all that is required, besides watering, until September or October, when the plants will be ready for earthing up. Before any soil is applied, the stalks must be arranged upright, and closely bound up with haybands to within a foot of the tops. The soil must then be earthed up nearly as high as the haybands reach, and be beaten hard with the spade. It is very important that this operation should be performed on a dry day, when the hearts are free from water, or they will probably decay. The plants will be fit for use in about a month, and may be taken up as required. Should Cardoons be in great demand, an earlier or little later sowing may be made for successional crops. If the plants have to be kept for any length of time during winter, rain and frost must be excluded by means of a covering of litter or other protecting material; or they may be dug up and stored away in a cool, dry place, the haybands being allowed to remain on.

Sorts. The Spanish Cardoon with large solid ribs and spineless leaves, is the one most cultivated; it is liable to run to seed, but not as much as the common sort. The Tours Cardoon is much cultivated in France; but great care is necessary in working amongst them, as the leaves have very long sharp spines. There are one or two other varieties, but the Spanish is most preferable, and is generally grown.

CARDUNCELLUS (the diminutive of *Cardunculus*, the Cardoon, and that from *carduus*). ORD. *Compositæ*. Pretty hardy herbaceous perennials, related to *Carthamus*. Flowers all tubular; pappus setaceous; involucral bracts many-seriate, imbricate; receptacle flat, densely setose or paleaceous. They succeed well in ordinary garden soil, and are readily increased by divisions of the roots. Carduncellus is rarely grown outside botanic collections.

C. mitissimus (least-spiny). *fl.-heads* blue. May, June. *l.*, cauline ones linear, pinnatifid, as long as the plant. *h.* 9in. France and Spain, 1734.

C. monspeliensium (Montpelier). *fl.-heads* blue. June, July. *l.* unarmed; radical ones toothed; cauline ones pinnate. *h.* 9in. South-west Europe, 1776.

CARDUUS (the Latin name used by Virgil, &c.). Thistle. ORD. *Compositæ*. Hardy annuals, biennials, or perennials. Receptacle bristly; involucre tumid, imbricated with spinous bracts; pappus hairs rough, in many series, united by a ring at the base, and deciduous; corollas all tubular, and generally spreading, so as to form a hemispherical head. They are of easy culture in any common soil. None, however, are worth growing in ordinary gardens; but for massing in woods, or in the wild garden, some may be desirable. Hence, we mention the names of a few of the more conspicuous species: *acicularis, Candollei, chrysacanthus, nutans, pycnocephalus* (Blessed Thistle), &c. Two Compositæ frequently met with in gardens, viz., *Silybum Marianum* and *Cnicus benedictus*, are often mentioned in books and catalogues under the generic name of Carduus.

CAREX (from *keiro*, to cut; the leaves of many species have their margins minutely serrated, which cause them to cut the hand if drawn rapidly along them). Sedge. ORD. *Cyperaceæ*. A very large genus of perennial grass-like herbaceous plants, of which upwards of sixty are natives of this country. Inflorescence paniculate, irregularly clustered, spicate or racemose. Stems usually leafy. They are of the easiest possible culture in ordinary garden soil. Propagated by seeds, or by divisions. By far the greater number of this genus possess no horticultural beauty whatever, and are only suitable for naturalising

Carex—*continued.*

near lakes, &c. Some are grown in pots for table decoration, and make beautiful plants for that purpose.

FIG. 367. CAREX BACCANS.

C. baccans (berried). Inflorescence paniculate. Ripe perigynia varying from coral red to lustrous purple. *h.* 2ft. to 4ft. A noble species, from Tropical and Sub-tropical Himalaya. See Fig. 367.

C. Grayi (Gray's). *fl.*, fertile spikes two, or rarely one, consisting of fifteen to thirty flowers, forming globose heads, the ripe perigynia projecting in all directions. July. *h.* 3ft. North America, 1879.

C. intumescens (swollen). *fl.*, spikes usually five to eight-flowered; ripe perigynia projecting outwards and upwards. June. *h.* 1½ft. North America.

C. paludosa (marsh). *fl.*, fertile spikes cylindrical, obtuse. May. *l.* very broad, keeled, rough; bracts very long, foliaceous. *h.* 2ft. Britain. (Sy. En. B. 1668.)

C. pendula (pendulous). *fl.*, fertile spikes very long, pendulous, cylindrical. May. *l.* broad; sheaths elongated, nearly equal to the flower-stalks. *h.* 3ft. to 5ft. Britain. (Sy. En. B. 1660.)

C. pseudo-cyperus (Cyperus-like). *fl.*, spikes on long footstalks, cylindrical, pendulous. June. *l.* ½in. broad; bracts very leafy. Stems 2ft. to 3ft. high, acutely triangular. Britain. One of the best marked and most beautiful of the genus. (Sy. En. B. 1685.)

C. riparia (river-bank). *fl.*, fertile spikes scarcely pedunculated, broadly cylindrical, acute; scales of the sterile spikes acuminated. May. *l.* broad; bracts very long, foliaceous. Britain. The variegated form of this is well worth growing in borders or among Ferns. (Sy. En. B. 1679.)

Carex—*continued.*

C. sylvatica (wood). *fl.*, fertile spikes filiform, rather slender, slightly drooping; sheaths half as long as the flower-stalks. May and June. *l.* narrow. *h.* 1ft. to 2ft. Britain. (Sy. En. B. 1665.)

CAREYA (named after the Rev. William Carey, of Serampore, a distinguished botanist and linguist). ORD. *Myrtaceæ.* Very handsome stove trees, or small shrubs. Flowers large, with white petals and red or yellow stamens. Leaves alternate, feather-nerved, dotless, glabrous. A mixture of one part sandy loam and two parts fibry peat suits them best. Ripened cuttings root freely, if planted in sand, with a hand glass over them, and placed in a moist bottom heat. Careyas may also be propagated by dividing the roots.

C. arborea (tree-like).* Slow-match Tree. *fl.* sessile; petals white; stamens reddish; spikes terminal, few-flowered. *l.* on short petioles, obovate or oblong, crenate-denticulate, about 1ft. long. *h.* 30ft. to 60ft. India, 1823. Tree. (B. F. S. 205.)

C. herbacea (herbaceous). *fl.* pedunculate; petals greenish-purple; stamens red; racemes short. July. *l.* on short petioles, cuneate-obovate or obovate, serrulate, 4in. to 8in. long. *h.* 6in. to 1ft. Bengal, 1808. Perennial herb, with a woody rootstock.

CARICA (erroneously supposed to be a native of Caria). Papaw-tree. Including *Papaya.* TRIBE *Papayaceæ.* ORD. *Passifloreæ.* A genus of stove evergreen fruit-trees, without branches, yielding an acrid milky juice. Leaves alternate, palmately lobed, standing on long terete petioles. They grow well in a rich, loamy soil. Cuttings of ripe shoots, if not deprived of their leaves, will root readily in a sandy soil, under a bell glass, and in a gentle bottom heat. They are grown in this country more as curiosities than for either ornament or utility.

C. candamarcensis (Candamarcan). Synonymous with *C. cundinamarcensis.*

C. cauliflora (stem-flowering). *fl.* yellowish; male peduncles usually five-flowered, rising from tubercles on the trunk. *l.* palmately five-lobed; intermediate lobes sinuated; segments lanceolate, acuminated. *h.* 10ft. to 20ft. South America, 1806.

C. cundinamarcensis (Cundinamarcan). *fl.* green. *fr.* yellow, edible. *h.* 6ft. Ecuador, 1874. SYN. *C. candamarcensis.* (B. M. 6198.)

C. Papaya.* Common Papaw. *fl.* greenish; male ones corymbose. July. *l.* palmately seven-lobed; segments deeply lobed, oblong, acute. *h.* 10ft. to 20ft. South America, 1690. (B. M. 2898.)

CARICATURE PLANT. *See* **Graptophyllum hortense.**

CARINA. A keel, like that of a boat; also applied to the lower petals of a pea-flower.

CARINATE. Keel-shaped.

CARINATELY-CONCAVE. Hollowed in such a manner as to resemble a keel externally.

CARINATELY-WINGED. Having a wing resembling a keel.

CARIOPSIS. A one-celled one-seeded superior fruit, whose pericarp is membranous and united to the seed, as in wheat, maize, and other kinds of corn.

CARISSA (probably a native Indian name, in Mahratta, *Korinda*). ORD. *Apocynaceæ.* A genus of stove shrubs and trees. Flowers white; peduncles axillary and terminal, many-flowered, everywhere becoming sterile and spinescent. Leaves opposite, furnished with intrapetiolar bristles. They are best grown in a compost of peat and loam. Cuttings of ripe wood will strike if placed in sand, under a glass, in bottom heat. They are of economical value in their native countries.

C. Carandas (Carandas). *fl.* milky-white, Jasmine-like; corymbs terminal and axillary, few-flowered. July. *l.* ovate, mucronate, or elliptic, obtuse, glabrous; spines often two-forked. Sub-arboreous. *h.* 15ft. to 20ft. India, 1790. (L. B. C. 663.)

C. grandiflora (large-flowered).* *fl.* white, fragrant, salver-shaped, 2in. across. May. *l.* deep green; spines axillary, forked. Natal, 1862. (B. M. 6307.)

C. spinarum (spiny). *fl.* white; petals lanceolate; peduncles terminal, four to five-flowered. August to December. *l.* small, ovate, acute, veiny, shining. Branches dichotomous; spines, two at each ramification opposite, the one above the branch and the other below it, red at top, and shining. *h.* 20ft. India, 1809. (L. B. C. 162.)

Carissa—*continued.*

C. Xylopicron (bitter-wooded). *fl.* white; petals acute; peduncles lateral, spiny, one to two-flowered. July. *l.* ovate, acuminated, glabrous, three to five-nerved. Branches forming a pyramidal cyme. *h.* 20ft. Bourbon, 1820.

CARLINA (from *Carolinus*, pertaining to Charles, commemorative of the famous Charlemagne, whose army was said to have been cured of the plague by it). ORD. *Compositæ.* Hardy or half-hardy annuals, biennials, or perennials. Pappus feathery; receptacle chaffy; involucre imbricated, tumid, the outer scales with numerous spines, the inner coloured, spreading, resembling a ray. They are of very easy culture in ordinary garden soil. A few only are worth growing, and are readily increased by seed, sown in spring.

C. acanthifolia (Acanthus-leaved).* *fl.-heads* white. June. *l.* pinnatifid, downy beneath; segments toothed, angular, spiny. Plant stemless. *h.* 2ft. Southern Europe, 1818. Hardy perennial. (A. F. P. iii., 51.)

C. acaulis (stemless). *fl.-heads* white. June. *l.* pinnatifid, naked; segments cut-toothed, spiny. Stem simple, one-flowered. *h.* 9in. Europe, 1640. Hardy perennial. SYN. *C. subacaulis.* See Fig. 368. (G. C. 1880, xiii., 1720.)

C. Biebersteiniana (Bieberstein's). *fl.-heads* purple. August. *h.* 2ft. Caucasus, 1816. Hardy perennial.

C. subacaulis. A synonym of *C. acaulis.*

CARLUDOVICA (named after Charles IV. of Spain, and Louisa, his queen). SYNS. *Ludovia, Salmia* (of Willdenow). ORD. *Cyclanthaceæ.* A genus of low-growing, palm-like, stove plants. Flowers of separate sexes, in squares arranged very close together in a spiral manner, and forming cylindrical spikes. Leaves stiff, plaited, deeply cut into from two to five divisions. Plants unarmed. The species are very ornamental, and several are eminently adapted for sub-tropical gardening, for which purpose they are largely employed in Parisian gardens. They are easily grown with the usual routine of stove management, thriving in a compost of two parts peat and one of sandy loam; a liberal supply of water is needed.

C. atrovirens (dark-green).* *l.* and petioles very deep green, smooth, deeply bilobed. A very fine ornamental-leaved plant.

C. Drudei (Drude's).* *fl.* ivory white, borne on an erect-stalked, terete spadix, of cylindrical form. *l.* rich deep green, 17in. long, and about 33in. in transverse diameter, tufted, transversely oblong in outline, palmately three-lobed, the lobes plicated, and deeply and regularly incised at the margin. *h.* 4ft. Columbia, 1878. (G. C. n. s. 8, 715.)

C. ensiformis (ensiform). *fl.* white, in close spikes. *l.* bipartite, ensiform. *h.* 2ft. Costa Rica, 1875. (B. M. 6418.)

C. humilis (dwarf).* *l.* rich deep green; 12in. to 18in. long, 9in. to 12in. broad at the widest part, rhomboid, deeply bifid at the apex. New Grenada. A very handsome but rare species. (R. H. 1869, 71.)

C. palmata (palmate).* *l.* rich dark green, 2ft. to 3ft. across, bifid at apex, and divided quite down to the point of attachment into four lobes, each of which is divided into narrow segments; petioles 4ft. to 6ft. in height, round, smooth. Peru, 1818. See Fig. 359. (R. H. 1861, 10.)

C. purpurata (purplish). *l.* deep green, 2ft., or more, long, and 12in. to 18in. broad, bifid at the apex, tapering towards the base; petioles 2ft. to 4ft. high, smooth, reddish-purple. Tropical America.

Carludovica—*continued.*

C. rotundifolia (round-leaved).* *l.* flabelliform, divided in two places quite down to the point of attachment, thus presenting a trilobed appearance; lobes divided into segments, which are very gracefully pendent. Costa Rica.

C. Wallisii (Wallis's).* *fl.* white, very sweetly scented, disposed in roundish oblong heads. *l.* ovate, two-lobed, and plicate; each division is about 1ft. long, and 6in. or 8in. broad; petiole erect, semi-terete. Columbia, 1879. (R. G. 992.)

CARMICHÆLIA (named after Captain Dugald Carmichael, F.L.S., an acute Scotch botanist, author of the "Flora of the Island of Tristan da Acunha," inserted in the twelfth volume of the Linnæan Society's Transactions). ORD. *Leguminosæ.* Very ornamental greenhouse evergreen shrubs, flowering for a considerable length of time. They thrive in a compost of sandy peat, to which may be added a very little fibry loam and leaf soil. Cuttings of half-ripened side shoots root in sand, under a glass, in a cool house, in April or May.

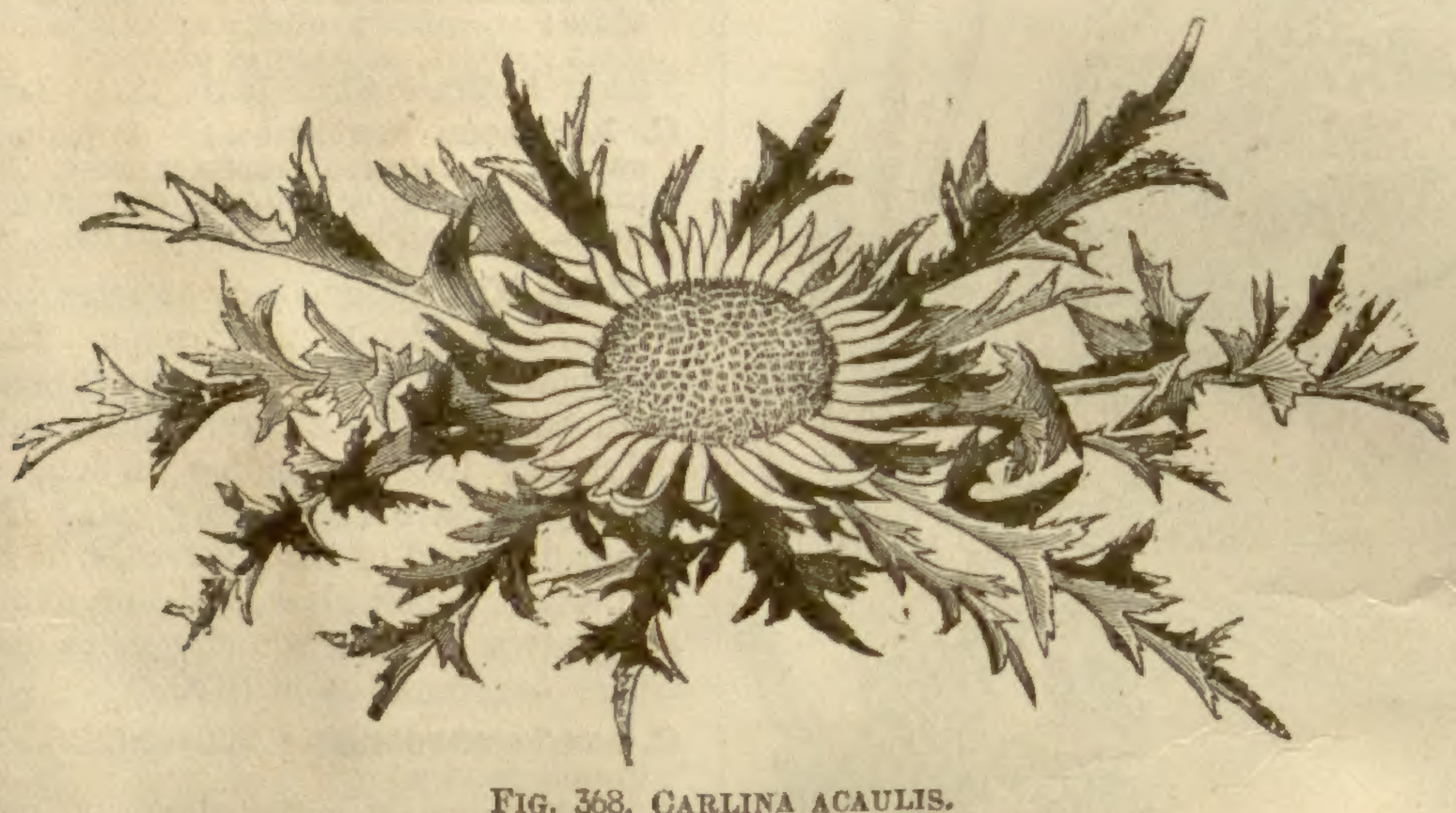

FIG. 368. CARLINA ACAULIS.

FIG. 369. CARLUDOVICA PALMATA.

Carmichælia – *continued.*

C. australis (southern).* *fl.* lilac; racemes simple, rising from the denticulations of the branches. May, September. *l.* with three to seven obcordate leaflets. Branches compressed. *h.* 2ft. to 4ft. New Zealand, 1823. (B. R. 912.)

CARNATION (*Dianthus Caryophyllus*). These charming flowers were, at one time, universal favourites, and the varieties were far more numerous than now. In the early days of gardening, they were often called Gilliflowers as well as Carnations. For some unaccountable reason, after 1850, they were seriously neglected, and many of the old varieties were entirely lost to cultivation; they are now, however, regaining popular favour, and are not only cultivated by specialists, but scarcely any garden can afford to be without some. There are no hardy flowers more deserving general cultivation than Carnations, as they present charming diversity and brilliancy of colouring, with a delicious perfume. Their stateliness of growth, and value in a cut state, are also characteristics greatly in their favour.

PROPAGATION may be effected by layers, pipings, or by seed.

Layers. This method is far more generally adopted than any other, whether the plants are grown in pots, borders, or beds. The end of July, or the beginning of August, is the best time for layering. Before commencing, a compost of leaf soil, loam, and sharp sand, in nearly equal proportions, should be prepared. Some pegs can be made of bracken stems, or other material of a like nature, which will decay in the soil. A layer of the compost, about 2in. in thickness, should be placed around each plant, as in this the young plants will root. The shoots selected should be denuded of a few of their leaves at the base of the young wood, and a slit must be made from this point upwards, extending through a joint of the bare stem, so that a tongue is formed. The layers should next be carefully pegged down in their place, keeping the incision open. About 1in. of soil must then be placed over the layered part to a little beyond the peg, and the whole well watered. If dry weather ensue, it will be necessary to give occasional waterings; but care must be taken that the shoots are not denuded of soil. Plants layered in pots should be placed in the open till they are rooted, which usually takes a month or five weeks. *See also* **Layering.**

Pipings. Where shoots are too short or too numerous for layering, or where they become broken by accident, it is desirable to propagate by pipings; such shoots may be removed before the time for layering. For this mode of propagation, it is necessary to have a slight hotbed, and on it to put 4in. or 5in. of fine light soil, covered with silver sand. The pipings must be long enough to have a tolerably firm base, and they must either be taken with a heel, or cut off at a joint, and firmly inserted in the soil. After a good watering, the light should be placed upon the frame, and the pipings must be kept close, and shaded. The soil must be maintained moderately moist till the roots are formed, but damp must be guarded against.

Seed. Propagation of Carnations by seed is a very interesting operation. By this means, new and excellent varieties are raised. Both single and double-flowered plants are produced from a packet of seed; the latter can be selected, and the best perpetuated by layering. The principal nurserymen supply seed of good quality, or anyone with a good strain may save his own. Hybridising may be effected with the best flowers in each class, so as to secure seed which will probably produce new kinds. The most suitable time for sowing is in April or May, and the best place a slight hotbed, or in a greenhouse. The pans should be properly drained, then filled with fresh sandy loam and leaf soil to within an inch or so of the top, making it tolerably firm, and the surface afterwards levelled, before sowing the seed. This should be scattered evenly over the soil, and then slightly covered with a little of the potting mixture, finely sifted. To keep the whole uniformly moist,

Carnation—*continued.*

a piece of glass should be laid on the top of the pan, till the seeds germinate; after which, the covering should be removed, and the pans placed in an airy position near the glass. As soon as the seedlings can be handled, they should be pricked out in beds, previously prepared by mixing in some fresh loam and rotten manure with the ordinary soil, and watered when necessary, to assist them in their growth. By the end of September, the plants will be sufficiently large to transfer to their permanent position in beds or borders, where they will bloom the following season.

GENERAL CULTIVATION. *Winter Treatment.* In favoured positions, many kinds will withstand the winter, especially if the soil is light and well drained. Generally, however, it is necessary to provide accommodation, for a portion of the stock at least, in cold frames; and when a choice collection is grown, it would be useless to attempt to keep it intact without winter protection. About September, when the layers or pipings are well rooted, they should be potted singly or in pairs, the former in 3in., and the latter in 4in. pots, according to the size of the plants. The potting compost should consist of loam two parts, leaf soil one part, and sand one part, with a fair amount of drainage. After potting, a good watering should be given, and the frame kept close for a week or two, until root-action is resumed, when air may be freely admitted. All through the winter, full advantage should be taken of fine weather to give all the air possible, by tilting, or entirely removing, the lights. If bleak winds prevail, it will be best to tilt the lights in an opposite direction to the wind. Until the beginning of February, when, as a rule, the plants begin to grow, great attention must be paid to watering. They must be kept somewhat dry rather than excessively wet, as the greatest enemy in winter is damp. If kept too wet, a disease known as "Spot" is likely to appear in the foliage, which may prove very prejudicial. Watering those that are dry, with a small-sponted can, so as to avoid unduly wetting the foliage, is preferable to using a rose. After February, they may have more water; in fact, it will then be very unwise to allow them to get at all dry.

Cultivation in Pots. The end of February, or the beginning of March, is, as a rule, the best time for potting; but, to some extent, this must be regulated by the season and condition of the plants. Pots 10in. in diameter are large enough to accommodate a pair of good strong plants, while weaker growing ones may be placed in 9in., or even 8in. pots. These should be well drained, and a layer of leaf soil or rotten manure placed over the crocks. The following is an excellent potting compost: Two parts good fibrous sandy loam, not broken too finely, one part leaf mould, and one part good rotten old hotbed manure, to which may be added a good sprinkling of coarse, gritty sand, from a river if it can be procured; well mix the whole together, but do not pass through a riddle. Pot the plants moderately firm, and sufficiently deep to allow of the layers being got to the surface without fear of breaking off. After potting, place back in the frame again, and keep well ventilated, until the plants show signs of fresh growth, when they may be stood outside in an airy position. Watering must be very carefully performed for some time after potting, and staking the leading growths must not be delayed, or they will be broken with the wind. If large flowers are required, the buds should be thinned in their early stages, and means taken to prevent the splitting of the calyx. Should there be signs of this, make two or three incisions in the opposite side, and fasten a piece of matting round it, which will materially assist to keep the petals together. In order to produce fine blooms for exhibition or other purposes, it will be necessary to thin the buds severely, leaving only the primary or finest ones to develop. For flowering, the plants are best removed to a cool greenhouse, where an abundance of air can be afforded; this protection will greatly lengthen the period of blooming, and materially assist to bring out the quality of the flowers. Where this

Carnation—*continued.*

is not practicable, a few lights, or some tiffany, should be temporarily arranged over them, when the same end will be gained; and after the plants are layered, the covering can be removed.

Cultivation in Beds or Borders. With the choicer varieties grown in pots, a magnificent collection may be cultivated in specially prepared beds or positions in an ordinary border. There are a large number of beautiful Selfs, and fancy border varieties, as a rule richly scented, which are far better treated in the open ground; and, presuming a special bed is allotted them, which is a much preferable method, even if duplicates are planted in the mixed border, it is necessary to ridge up the bed in the autumn for exposure to the sweetening effects of wintry weather, and the extermination of insects. At the same time, a dressing of soot and lime, mixed, may, with advantage, be well incorporated with the soil, for the destruction of these pests, especially the wireworm, which is a very troublesome insect in Carnation culture. An addition of leaf soil and sharp sand should also be made if the soil is stiff or clayey. The plants should be put out in March, about 1ft. apart each way; more space between the lines may be allowed if desired, according to the size or shape of the bed. Keep the beds clean, and, when dry, thoroughly watered. As the buds expand, occasional doses of liquid manure will be found beneficial. It will also be necessary to thin the buds if large blooms are required, as recommended for those grown in pots. When grown in odd spaces in the border, equally as much attention is needed as when grown in beds. The blossom-stalks require staking in order to display the flowers, and to keep them from being soiled. Very neat stakes should be used, and they should be neither longer nor shorter than really

FIG. 370. METHOD OF STAKING CARNATIONS.

required. A very good form of wire stake is shown in Fig. 370, with which tying is unnecessary.

Insects. Green fly is the most troublesome. As a rule, unless in very dry seasons, they do not attack those planted out; but, when grown in pots, and while the young plants are in the frames, they are very likely to cause great injury. The best means of eradicating them is by tobacco fumigation; and it is better to give a thorough fumigation before the young growth is developed. If they are troublesome after, it will again be necessary to fumigate, but rather repeat than overdose the plants. Wireworms are very destructive at the roots. The soil should be carefully looked over before being used for potting, as any wireworms left in it would eat the roots as fast as they are formed, eventually killing the plant. Should established plants be attacked, some carrots placed in the soil will form a good trap, as the wireworms eat into them, and may easily be removed and destroyed.

PROPERTIES. The characteristics of a good Carnation are as follows: The pod (*i.e.*, calyx) should be long, as then

Carnation—*continued.*

the flower is not liable to burst it, as is the case when it is short. The flower should be quite circular, and rising up gradually towards the centre, so as to form half a ball. The outer, or guard petals, should be large, and few in number, rising slightly above the calyx, then spreading horizontally; and the other petals should be regularly disposed on them, nearly flat, and diminish in size towards the centre. The texture of the petals should be thick and wax-like, and the markings distinct and clear; the ground a pure white, any flushing or running of the colour being a decided disqualification.

FIG. 371. FLOWERS OF BIZARRE CARNATION.

CLASSES. There are three distinct classes, viz.: Bizarres, (see Fig. 371), Flakes, and Selfs. The Bizarres have a clear ground, variously marked and flaked with two or three colours; of these there are Crimson, Scarlet, and Pink and Purple varieties, each characterised by the distinguishing colours predominating. Flakes have a pure ground, flaked with one colour, of which there are Scarlet, Purple, and Rose varieties. Selfs should be one-coloured, in any shade, but the more defined, the more effective they are. The following is a selection of the best varieties in each class, at present grown, to which additions are constantly being made:

Crimson Bizarres. A. D. SOUTHGATE (Dodwell), BLACK DIAMOND (Haines), ECCENTRIC JACK (Fletcher), E. S. DODWELL (Hewitt), ISAAC WILKINSON (Turner), J. D. HEXTALL (Simonite), JENNY LIND (Puxley), JOHN SIMONITE (Simonite), LORD MILTON (Ely), MARGUERITE (Dodwell), MILLIE (Dodwell), QUEEN VICTORIA (Fletcher), RIFLEMAN (Wood), SATURN (Gorton), SIR GARNET WOLSELEY (Fletcher), THOS. MOORE (Dodwell).

Pink and Purple Bizarres. FALCONBRIDGE (May), JAMES TAYLOR (Gibbons), LORD CLIFTON (Puxley), MISS HENDERSON (Dodwell), MRS. BARLOW (Dodwell), OLIVE (Fletcher), PRINCESS BEATRICE (Beardsley), SARAH PAYNE (Ward), TOM FOSTER (Dodwell), T. S. WARE (Dodwell).

Scarlet Bizarres. ADMIRAL CURZON (Easom), ALFRED HUDSON (Dodwell), ARTHUR MEDHURST (Dodwell), BEN SIMONITE (Dodwell), CARACTACUS (Dodwell), CHARLES TURNER (Dodwell), DANDY (Dodwell), DUKE OF GRAFTON (Hooper), EDWARD ADAMS (Dodwell), FANNY GARDINER, FRED (Dodwell), GUARDSMAN (Ward), JIM WHITAKER (Dodwell), JOHN HINES (Dodwell), LORD NAPIER (Taylor), MARS (Hextall), MASTER STANLEY (Dodwell), MR. FAWCETT (Fletcher), RAYNER JOHNSON (Dodwell), SIR JOSEPH PAXTON (Ely), TOM BROWN (Dodwell), TOM POWER (Dodwell), WILFRID SYMES (Dodwell), WM. SPOOR (Adams).

Purple Flakes. ATTRACTION (Fletcher), BEAUTY OF WOODHOUSE (Mansley), DR. FOSTER (Foster), DR. WHITRON (Fletcher), EARL STAMFORD (Elliott), G. F. WILSON (Dodwell), JAMES DOUGLAS (Simonite), LADY PEEL (Haslam), MAYOR OF NOTTINGHAM (Taylor), MAYOR OF OXFORD (Dodwell), SQUIRE TROW (Jackson).

Rose Flakes. JAMES MERRYWEATHER (Wood), JESSICA (Turner), LADY GARDENER (Ely), MADGE WILDFIRE (Dodwell), MARY ANN

Carnation—*continued.*

(Fletcher), MR. BUCKLEY (Fletcher), MRS. BARRETT (Fletcher), MRS. MATTHEWS (Dodwell), RACHAEL (Fletcher), ROB ROY (Gorton), ROSE OF STAPLEFORD (Holmes).

Scarlet Flakes. ANNIHILATOR (Jackson), CLIPPER (Fletcher), DAN GODFREY (Holmes), FRIAR TUCK (Dodwell), HENRY MATTHEWS (Dodwell), ILLUMINATOR (Puxley), JAMES CHEETHAM (Chadwick), JOHN BALL (Dodwell), RICHARD GORTON (Dodwell), RISING SUN (Kirtland), SCARLET KEET (Dodwell), SPORTSMAN (Fletcher), WILLIAM LANG (Dodwell), WILLIAM MELLOR (Dodwell).

Selfs. ALBERT (Turner), purple; ARETHUSA (Dodwell), magenta; AUCTIONEER (Ware), deep magenta, very fine; BRIDE (Overs), pure white, very fine; CONSTANCE (Dodwell), rich rose; CORONER (Ware), bright scarlet; CRIMSON, old double Clove; CYNTHIA (Dodwell), bright rose, very pretty; GERTRUDE TEIGNER (Ware), rich pink, very fine; GLOIRE DE NANCY (Lemoine), pure white, very vigorous and free; GOG (Dodwell), carmine-purple; KING OF THE YELLOWS (Abercrombie), rich sulphur-yellow; LADY ROSEBERY (Turner), the best yellow Self; MARY MORRIS (Smythe), rich salmon-rose, immense; MRS. MATTHEWS (Matthews), pure white, freely fringed; SPARKLER (Ware), crimson-scarlet; VIVID (Dodwell), very brilliant scarlet; W. P. MILNER (Fisher), pure white, of grand substance, one of the best.

TREE OR PERPETUAL. These are, without doubt, some of the most useful plants grown for cut bloom, and their culture is of the easiest. Some growers strike the cuttings from July till the end of August, in gentle heat, or layer the old plants in a frame, in August, and, when well rooted, pot them off into 3in. pots, or the stronger ones into 4in. pots, in which the plants are wintered the first season, in an airy position near the glass. The second season, the plants are grown on, and not allowed to bloom through the summer, about two shifts being given until they are in 10in. pots. Meanwhile, the shoots are trained as required, and the general shape of the plant arranged. When the pots are filled with roots, liquid manure should be supplied, and, about the middle of September, they may be taken indoors, giving plenty of air for some days. By maintaining a temperature of from 45deg. to 50deg., and applying liquid manure, plenty of bloom may be obtained through the winter and early spring months. For potting soil, use good fibrous yellow sandy loam three parts, and one part rotten manure, with enough sand to keep the whole sufficiently porous to admit of the free passage of water. Another excellent method of cultivation is to put the cuttings in, selecting the small side shoots, about the middle of January, in bottom heat, of about 70deg. to 75deg., with an atmospheric temperature of 60deg. to 65deg.; or they may be struck in a half-spent hotbed, when it will not be advisable to put them in till February. As soon as rooted, they should be potted off, and gradually hardened, so that they will bear removal to the greenhouse, where they should remain till April. They may then be shifted on, and grown liberally in pots, or be planted out. In June, go over the plants, and take off the tops; and, about once a fortnight, remove the tops of any of the side shoots which may appear likely to bloom. About the end of September, the plants should, if placed out, be carefully potted up, and shaded for a week or ten days, keeping them well supplied with moisture; and, after root action is resumed, removed to the greenhouse, and an unlimited supply of air given until frost sets in. Only sufficient fire heat should be applied in winter to maintain a temperature of 50deg. to 55deg., and a free circulation of air should be admitted on all favourable occasions during the day.

Fumigate if fly should put in an appearance; and for mildew, flowers of sulphur should be thoroughly dusted over the plants, washing it off after three days, taking care to remove all dirt from the plants.

Varieties. These are numerous, and their number constantly being added to. The following are among the best:

A. ALEGATIERE, bright scarlet; AMAZON, buff, edged scarlet; BELLE ROSE, rose; BOULE DE FEU, scarlet; BRIDE, pure white; COVENT GARDEN, scarlet; DRAGON, scarlet; FIREFLY, bright scarlet; FLORENCE, clear buff-yellow; GARIBALDI, rosy-scarlet; GOURDAULT, scarlet, crimson-flaked; HENSHAW'S, scarlet; JEAN BART, bright scarlet; JEAN SISLEY, yellow, red-edged; LA BELLE, pure white, very fine; LEE'S, scarlet; MADAME ALEGATIERE, carmine-rose; MAIDEN'S BLUSH, blush-white; MISS JOLLIFFE, blush-pink; MRS. G. HAWTRY, bright yellow; OSCAR, yellow; PRINCE OF ORANGE, yellow, edged with crimson; PURITY, white; REMBRANDT, large crimson; SOUVENIR DE MALMAISON, blush-white; VALIANT, rosy-scarlet; VAN DYCK, white, striped rose VULCAN, mottled-red.

Carnation—*continued.*

CARNAUBA PALM. *See* **Copernicia cerifera.**

CARNOSE. Fleshy; of thick substance.

CAROB-TREE. *See* **Ceratonia Siliqua.**

CAROLINA ALLSPICE. *See* **Calycanthus floridus.**

CAROLINEA. *See* **Pachira.**

CARPEL. A division of the ovary; one of the modified leaves forming the pistil.

CARPENTERIA (named after the late Professor Carpenter, of Louisiana). ORD. *Saxifrageæ.* An ornamental tall-growing shrub, which will thrive in any good loamy soil, and will probably prove hardy in this country. It is too recent an introduction for us to be able to speak more definitely respecting it.

C. californica (Californian).* *fl.* white. *l.* broadly lanceolate, entire, 2in. to 3in. long, pinnately-veined, whitened beneath with a minute and close pubescence. Sierra Nevada, California, 1880.

CARPINUS (Latin name used by Pliny). Hornbeam. ORD. *Cupuliferæ.* Hardy deciduous trees, mostly medium-sized. Male flowers, catkins later, sessile, cylindrical; bracts imbricate. Female flowers in lax terminal

FIG. 372. FLOWERING BRANCH OF CARPINUS BETULUS.

catkins; outer bracts entire; inner bracts in pairs, three-lobed. Leaves simple, alternate, exstipulate, deciduous. *C. Betulus* is the one most generally grown. It forms a good hedge plant, and bears pruning well, while the leaves remain on after they are dead, thus affording good shelter. It is not much grown in this country, but its timber is valuable; it is also very useful as an agricultural tree, to shelter exposed fields, as it endures rough and windy situations, and thrives well in common soil. The seeds, which are formed in a small nut, are ripe at the end of autumn, but they vegetate irregularly, some coming the

Carpinus—*continued.*

first year, some the second. If they grow thickly, they should be transplanted when a year old, but if thinly, they may be allowed to stand for two years, and then transplanted, cutting off the extremities of the roots. After two years in nursery lines, they are fit for hedges. If not then removed, and a greater space allowed them to grow in, they will run up tall, and be unfit for hedge plants.

C. americana (American).* *l.* ovate-oblong, pointed, sharply doubly serrate, soon nearly smooth; bractlets three-lobed, halbert-shaped, sparingly cut-toothed on one side. *h.* 10ft. to 50ft. North America, 1812.

C. Betulus (Birch-like).* Common Hornbeam. *fl.* yellowish. May. *fr.*, bracts flat, oblong, serrated, with two lateral lobes; nuts brown, ripe in October or November. *h.* 50ft. to 70ft. Britain. See Fig. 372. There are several varieties, including *aurea-variegata* (golden-variegated-leaved), *incisa* (cut-leaved), *quercifolia* (Oak-leaved), and *variegata* (variegated).

CARPOCAPSA POMONANA. *See* **Apple** or **Codlin Grub.**

CARPODINUS (from *karpos*, a fruit, and *dineo*, to turn round; application disputed). ORD. *Apocynaceæ*. Stove evergreen climbing shrubs, thriving in a mixture of open loam and sandy peat. Easily propagated from cuttings of half-ripened shoots. The best known species is:

C. dulcis (sweet). *fl.* green, almost sessile, twin, axillary. June. *l.* ovate-lanceolate, glabrous. *h.* 8ft. Sierra Leone, 1822. A fruiting shrub.

CARPODONTOS. *See* **Eucryphia.**

CARPOLYSA (from *karpos*, a fruit, and *lyssa*, rage; in reference to the peculiar method of opening). ORD. *Amaryllideæ*. A very pretty little bulb, from the Cape of Good Hope. For culture, *see* **Ixia.**

C. spiralis (spiral).* *fl.* white, reddish outside; scapes filiform, 4in. to 6in. high, spirally twisted from the base to the middle, thence straight; perianth tube short, widening upwards; umbels two to four-flowered; spathe two-leaved April and May. *l.* spiral, filiform. 1791. SYN. *Strumaria spiralis.* (B. M. 1383.)

FIG. 373. SHORT CARROT.

CARROT (*Daucus Carota*). **Hardy biennial.** The wild Carrot is a native of Britain. This is generally a very important crop, or rather series of crops, as, in order to keep up a good supply fit for table, it is necessary to sow often, so as to have a succession of young tender roots, free from the hard core which is invariably present in many of the large varieties.

Carrot—*continued.*

Soil. Carrots require soil that is of a good depth and, if possible, rather light. It should not be specially manured for them, or they will produce forked roots, instead of growing straight down. Ground that has been manured for a previous crop will suit better. It should also be free from wireworms, or other injurious grubs. Many gardens do not contain soil suitable for good Carrot culture; in such cases, it would be advisable to grow the short varieties (see Fig. 373), and prepare a sufficient depth of soil for them.

Cultivation. Having selected the site, deeply dig the ground for the Short varieties, or trench to a depth of

FIG. 374. LONG CARROT.

from 18in. to 2ft. for the Long kinds (see Fig. 374). This should be done as early in autumn as possible, and the ground left in ridges for the winter, forking it over in spring. Before sowing, rake the ground level, and draw shallow drills, from 8in. to 12in. apart, according to the sort grown. In these drills thinly sow the seeds; and here a little discretion and care are required. The seeds being very liable to stick together, it is advisable that they should be mixed with sharp sand, and well rubbed between the hands, to separate them, otherwise the plants will come up in thick clusters or bunches. After sowing, lightly cover the seeds with fine soil, and again rake over the whole of the ground, to remove stones and make the soil fine. As soon as the rows can be seen, flat hoe the beds, to destroy weeds, or they will grow much faster than the Carrots, and make it a difficult matter to clear them. When the plants are large enough, thin them out to about 4in. apart, again removing some when large enough to

Carrot—*continued.*

cook. The main crops will be ripe and ready to lift during October, or early in November, according to the season. Carefully lift in dry weather, cutting off the leaves close to the crowns, and store the roots in moist sand or soil, in a cool place. For table use, the Horn varieties are, perhaps, the best. To secure a succession, sow small quantities on a warm border, under a wall, in February, in March, and again in April. The main crop should be sown about the end of March, and additional sowings made each month until August. The smaller kinds will only require a space of about 8in. between, and 6in. in the rows; on this account, they are most useful for small gardens.

Forcing. Early Carrots are generally in great demand, and to obtain them it is necessary to sow on a hotbed in early spring. A great heat is not necessary, but it should be constant. Stable litter, with plenty of leaves well mixed with it, should be prepared and put into a frame with a depth of 3ft. or 4ft. Tread it firmly and evenly, and allow it to remain for a few days before sowing. About 6in. of light soil will be sufficient, and the seeds may be sown thinly, either broadcast or in shallow drills, afterwards watering in. The first sowing should be made early in February, and succession beds kept up until the end of April, according to the quantity required. Give air on every favourable opportunity so soon as the plants are up, or they will quickly get drawn. They should only be moderately thinned at first, allowing them to grow large enough for use, and then removing the largest each time for this purpose. Early French Forcing is one of the best varieties for forcing purposes.

FIG. 375. UMBEL OF CARROT.

An umbel of Carrot, intact, is shown at Fig. 375. It is necessary to thoroughly separate the seeds before sowing.

FIG. 376. CARROT, JAMES'S INTERMEDIATE.

Sorts. There are many varieties of Carrots in cultivation, but some are not fit for table use, on account of their

Carrot—*continued.*

pale colour or the hardness of the core. The following may be relied on as some of the best for any purpose. Forcing and early crops: Common Early Horn, Early French Forcing, Early Nantes, and Early Short Horn (see Fig. 373). Main crops: Altrincham, James's Intermediate (see Fig. 376), Long Horn (see Fig. 374), and Long Red Surrey.

CARROT BLOSSOM MOTH (*Depressaria daucella*). The caterpillars of this moth inflict considerable damage on the Carrot seed-crop, in summer, by eating away the flower-heads, which they envelop with their webs. According to Miss Ormerod, the caterpillar is of a greenish-grey or yellowish colour, with black, hairy warts, and some faint streaks along the back; and the head, as well as the upper side of the first segment behind it, is brown or black. It is only about ½in. long when full grown. Sometimes the caterpillar changes to the chrysalis in the flower-head; sometimes it bores for this purpose into the stem. The moth is little more than ¾in. in the spread of the upper wings; the head and body between the wings are reddish-brown, freckled with black. The upper wings are of the same colour, freckled with white, and having black streaks, and the under sides dark; the hind wings are light grey.

The only effectual way of destroying this pest is to shake the infested plants, when the caterpillars will descend by means of a thread, and may be killed by burning or otherwise. A dusting of powdered Hellebore would probably be of some service; but, being a deadly poison, it should be used with great caution.

CARROT FLY. *See* **Carrot Grubs.**

CARROT GRUBS (*Psila rosæ*). The grub of the Carrot Fly, which plays such havoc among Carrots, is cylindrical, and of a pale yellow colour; the body tapers slightly towards the mouth, while the other end is rounded; its skin is smooth and shining; the tail has two little black tubercles. When the larva is full grown, it quits the Carrot, and, burrowing into the earth, becomes a pupa, light brown in colour, and oval. The perfect fly is shining black, slightly tinged with a greenish lustre. It has yellowish legs, white "balancers," and hyaline transparent wings; the head is reddish-yellow, and the antennæ and palpi tipped with black.

These grubs are probably the most destructive insects that attack Carrots. They bore into the roots, causing the tops to turn brown and eventually to die. The crop is almost entirely lost in some gardens in consequence. As soon as any plants are observed to be sickly, they should be pulled up, and either burned or destroyed by some other means. Dressing the ground with lime the previous autumn, or the drills with lime and soot when sowing, is sometimes a good preventative. It is also important not to use the same ground for Carrots two successive years, especially if these insects or any wireworms are present in the soil.

CARTHAMUS (from the Arabic *qurtom*, to paint; Hebrew *qarthami*; referring to the flowers yielding a fine colour). Safflower. ORD. *Compositæ*. Pretty hardy annuals. Pappus paleaceous, hairy, or none; receptacle paleaceous, setose; involucre ovate, imbricated; scales ovate, leafy at end. They thrive in any ordinary soil. Seeds should be sown in a gentle hotbed, in spring; and, when the seedlings are large enough to handle, they should be transplanted to a situation where they are intended to flower. These plants should only be grown in large gardens.

C. lanatus (woolly). *fl.-heads* yellow. South Europe, 1596. Hardy annual. (B. M. 2142.)

C. oxyacantha (sharp-spined). *fl.-heads* yellow. July. *h.* 2ft Caucasus, 1818.

C. tinctorius (dyers'). Saffron Thistle. *fl.-heads* orange. June. *l.* ovate, entire, spiny-toothed. Stem quite smooth. *h.* 3ft. Egypt, 1551. (B. R. 170.)

CARTILAGINOUS. Gristly, tough, or leathery.

CARUM (from *Karos*, the Greek name used by Dioscorides). Caraway (originally found at Caria, in Asia Minor). Including *Ptychotis*. ORD. *Umbelliferæ*. Glabrous herbs. Flowers white. Leaves pinnate; segments or leaflets multifid. Roots tuberous. Caraway is a naturalised biennial, and will do well in most garden soils if tolerably dry in winter. The seeds are best sown in autumn, or in March, in drills 1ft. apart, and the plants, when strong enough, thinned out to about 8in. in the rows. The ground will require an occasional hoeing. Seeds will be produced in the following summer, ripening about August. These are much used, after being dried, in confectionery, and sometimes for flavouring and perfumery. For culture of *C. Petroselinum*, *see* **Parsley**.

C. Carvi (Caraway). *fl.* white; involucre and involucels wanting. May. *l.* bipinnate; leaflets decussate, multifid. Stems furrowed. *h.* 1½ft. Europe. (Sy. En. B. 582.)

C. Petroselinum (Petroselinum). Parsley. *fl.*, involucre of few, partial one of many, leaflets. June and July. *l.* decompound, shining; lower leaflets ovate-cuneate, trifid, toothed; upper ones lanceolate, nearly entire. Europe (naturalised in Britain). SYN. *Petroselinum sativum*.

CARUMBIUM. A synonym of **Sapium.**

CARYA (from *karya*, a Walnut-tree, from *karyon*, a nut). Hickory. SYN. *Scorias*. ORD. *Juglandaceæ*. Very handsome hardy deciduous trees, far too rarely seen in this country. This genus differs from *Juglans* in having the male catkins clustered, with from three to ten stamens in each flower, and the firm (at length) dry exocarp splitting into four regular valves, and falling away from the smooth, bony endocarp or shell. Leaves alternate, exstipulate, of five to fifteen leaflets, serrate; the lateral ones in opposite, or nearly opposite, pairs, and all spreading in one plane. Propagation is effected by nuts, planted where the trees are intended to remain, as most of the species have very long tap roots, which, with the exception of *C. amara*, are nearly destitute of fibres. The species here described are all North American.

C. alba (white).* Shell-bark Hickory. *fl.*, catkins glabrous. May. *fr.* globular or depressed; nut white, compressed, barely mucronate, the shell thinnish. *l.*, leaflets five, finely serrate, when young minutely downy beneath; the lower pair oblong-lanceolate, the three upper obovate-lanceolate. *h.* 50ft. to 70ft. (W. D. B. 148.)

C. amara (bitter).* Bitter Nut, or Swamp Hickory. *fl.*, sets of catkins in pairs. April. *fr.* globular, narrowly six-ridged; nut globular, short-pointed. *l.*, leaflets seven to eleven, lanceolate or oblong-lanceolate, pubescent when young, afterwards almost glabrous. *h.* 50ft. to 60ft. 1800. (T. S. M. 226.)

C. olivæformis (Olive-formed). Pecan Nut. *fr.*, nut olive-shaped. *l.*, leaflets thirteen to fifteen, oblong-lanceolate, tapering gradually to a slender point, falcate, serrate. *h.* 30ft. 1766.

C. porcina (pig). Pig Nut, or Broom Hickory. *fr.*, nut oblong or oval, with a thick bony shell. *l.*, leaflets five to seven, oblong or obovate-lanceolate, and taper-pointed, serrate, glabrous or nearly so. *h.* 70ft. to 80ft. (T. S. M. 224.)

C. tomentosa (tomentose).* Mocker Nut; White-heart Hickory. *fl.*, catkins short, and lower surface of leaves tomentose when young, resinous-scented. May. *fr.* on some trees globular or ovoid, with a thick and hard husk; nut globular, not compressed, four-ridged towards the slightly pointed summit, brownish, very thick shelled. *l.*, leaflets seven to nine, obovate-lanceolate, or lower oblong-lanceolate, pointed. *h.* 60ft. to 70ft. 1766. (T. S. M. 222.)

C. t. maxima (largest). *fr.* globose, nearly twice the size of that of the type; "as large as an apple;" husk exceedingly thick.

CARYOCAR (from *karyon*, a nut; the large fruits contain edible nuts). Butter Nut. SYN. *Rhizobolus*. ORD. *Ternstroemiaceæ*. Large stove trees, of easy cultivation in loamy soil. Ripened cuttings will root in sand, under a hand glass, in heat. There are about eight species, all tropical American; the only one calling for mention here is *C. nuciferum*.

C. nuciferum (nut-bearing). Souari or Butter Nut. *fl.* racemose; calyx and corolla purple; stamens white, numerous; anthers yellow. Drupe 5in. to 6in. in diameter, four-celled, each cell containing one nut, embedded in white pulp; shell very hard, tubercled; kernel or seed edible, covered by a red-brown membrane, internally pure white, soft, fleshy, and rather oily, of a very agreeable flavour. *l.* trifoliolate; leaflets elliptical-lanceolate, obscurely serrated, smooth. *h.* 100ft. 1823. (B. M. 2727.)

CARYOPHYLLEÆ. An extensive order of herbs, with stems swollen at the joints. Flowers terminal, solitary, or disposed in racemes, panicles, or corymbs. Leaves entire, opposite. Well-known genera are: *Arenaria*, *Cerastium*, *Dianthus*, *Lychnis*, *Saponaria*, and *Silene*.

CARYOPHYLLUS (from *karuophyllon*, Clove-tree; literally nut leaf, from *karuon*, a nut, and *phyllon*, a leaf). Clove-tree. The Arabs, who have been acquainted from all antiquity with the Clove, called it Qarumfel, which the Greeks altered to Caryophyllon. ORD. *Myrtaceæ*. A stove evergreen tree, now generally referred to genus *Eugenia*. Cymes terminal, or sub-corymbose, in the forks of the branches. Leaves opposite, coriaceous, dotted. It grows best in a mixture of loam and peat. Cuttings of firm shoots, with the leaves left on, will root if planted in a pot of sand, with a hand glass over them, and placed in a moist heat. It is difficult to preserve this tree through the winter.

C. aromaticus (fragrant).* *fl.*, petals pale purple; calyx dark purple; cymes many-flowered. *l.* ovate-oblong, acuminated at both ends. *h.* 20ft. to 40ft. Moluccas, 1796. The flowers of this tree are the cloves of commerce.

CARYOPTERIS (from *karuon*, a nut, and *pteron*, a wing; fruit winged). ORD. *Verbenaceæ*. Ornamental, hardy, herbaceous or sub-shrubby perennials, with a bushy habit. They thrive in ordinary garden soil. Propagated by seeds, by divisions, or by cuttings.

C. Mastacanthus (moustache).* *fl.* rich violet; peduncles axillary, fastigiate. Autumn. *l.* ovate-oblong, petiolate, obtuse, coarsely serrated, downy. *h.* 2ft. China, 1844. A handsome greenhouse or half-hardy herbaceous plant, growing freely in any garden soil. It requires plenty of water during the summer months. SYN. *Mastacanthus sinensis*. (B. R. 1846, 2.)

C. mongolica (Mongolian). *fl.* violet-blue, numerous, in small long-stalked axillary corymbs, forming loose spikes nearly 2ft. long. *l.* opposite, lanceolate-elliptic, greyish-green, hoary beneath. *h.* 3ft. Chinese Mongolia, 1869. (R. H. 1872, 451.)

CARYOTA (old Greek name *karuotis*, used by Dioscorides; the Greeks first applied this name to their cultivated Date). ORD. *Palmeæ*. A genus of about a dozen species of very noble stove palms, with bipinnate leaves, the ultimate divisions of which have the shape of the fins and tail of a fish—features which distinguish the present from all other genera of the order. They attain their full size before commencing to flower; the spadices, which are developed first at the top, and last at the very foot of the trunk, are large, and their spikes hang down in bundles. When the flowers have been produced from the trunk, nearly at ground level, the plant dies, unless it has previously developed suckers. Two species, *sobolifera* and *urens*, are frequently employed in sub-tropical gardening, from June till September, and their unique appearance renders them well suited for the purpose. When in a young stage, Caryotas form excellent ornaments for dinner tables, &c. They require a compost of loam and vegetable mould in equal parts, with the addition of a little sand; thorough drainage, and a liberal supply of water during the growing season, are essentials to success. Propagated easily by seeds, or by suckers; the first named are frequently produced in this country.

C. Cumingii (Cuming's).* *l.* large, dark green, spreading, bipinnate, 4ft. to 6ft. in length, and 3ft. in width; pinnules 8in. to 10in. long, sub-falcate, obliquely wedge-shaped below, and erosely toothed upwards. The spadices hang in drooping tassel-like tufts from the axils of the leaves, and the flowers are succeeded by bright red berries, which lend an additional charm to this beautiful stove plant. Trunk or stem slender, about 10ft. high. Philippine Islands, 1841. (B. M. 5762.)

C. maxima (largest). *l.* bipinnate; pinnæ coriaceous, rigid, elongated, dimidio-lanceolate, acuminate. Stem tall. Java, 1849.

C. mitis (mild). *l.* reclining; pinnæ cuneiform, obliqne, præmorse. *h.* 20ft. China, 1820.

C. propinqua (neighbouring). *l.* bipinnate; pinnæ coriaceous, sessile, dimidiato-rhomboid, obtuse or acuminate, præmorse. Stem tall. Java, 1850.

C. purpuracea (purple). *l.* bipinnate; pinnæ unequal, both in size and shape; petioles clothed with rusty tomentum. *h.* 30ft. Java, 1848. This species resembles *C. urens*, but is

Caryota—*continued.*

more compact, the petioles are not so long, and the leaves more numerous.

C. Rumphiana (Rumph's).* *l.* bipinnate, spreading, 3ft. to 8ft. long; pinnules sessile, coriaceous, obliquely cuneate and præmorse, 4in. to 6in. in length, and the same in breadth at the widest part, lying very flat and even, and deep green in colour. Indian Archipelago. Very handsome and distinct.

C. sobolifera (sucker-bearing).* *l.* bipinnate; pinnæ bright light green; petioles, when young, clothed with a short black scaly tomentum. Malacca, 1843. An elegant, slender-stemmed, somewhat dwarf species, not very unlike *C. urens* in the form of the leaves. Suckers are more freely produced by this species than by any other. See Fig. 377.

FIG. 377. CARYOTA SOBOLIFERA.

C. urens (stinging). *l.* bipinnate, spreading, 3ft. to 12ft., or even more, in length: pinnules obliquely cuneate, sub-coriaceous, erose, caudate, 6in. to 9in. in length, and 4in. in breadth, dark green. Stem stout. *h.* 50ft. India, 1788. Probably the largest-growing species.

CASCADE, or WATERFALL. This, says Loudon, is an obvious improvement where a running stream passes through a demesne, and is to be formed by first constructing a bank of masonry, presenting an inclined plane to the current, and rendering it impervious to water by the use of cement; and next by varying the ridge of the bank, and the bed of the river below it, with fragments of rock, so chosen and placed as not to present a character foreign to what Nature may be supposed to have produced there. The adjoining ground frequently requires to be raised at such scenes, but may be harmonised by plantations. Where

Cascade, or Waterfall—*continued.*

running water is conducted in the forms belonging to the geometric style of gardening, Cascades are constructed in the form of crescents, flights of steps, or wavy slopes, all of which produce excellent effects when appropriately introduced.

CASCARILLA BARK. *See* **Croton Eluteria.**

CASEARIA (named after J. Casearius, who assisted Rheede in the "Hortus Malabaricus"). ORD. *Samydaceæ.* A genus of stove evergreen trees, with astringent and medicinal properties, but of no ornamental value. There are numerous species.

CASHEW NUT. *See* **Anacardium occidentale.**

CASIMIROA (named after Cardinal Casimiro Gomez). ORD. *Rutaceæ.* A genus, allied to *Skimmia*, containing a couple of species, the one hitherto introduced being an evergreen greenhouse tree, succeeding well in rich friable loam with perfect drainage. It is very likely that this fine fruiting tree will be extensively grown when better known, as it would probably succeed in the open air in the Channel Islands, in the south and south-west of England, and in Ireland. We have hitherto failed in striking cuttings, as also in finding a stock on which it will graft. It may, however, be readily raised from seeds.

C. edulis (edible).* White Sapota. *fl.* green, small. *fr.* about the size of a St. Michael orange, borne on the two-year-old wood, of a greenish-yellow colour when ripe, and having a delicious melting flavour, like that of a peach. *l.* digitate. Mexico, 1866. (G. C. n. s., viii. 465.)

CASPARIA SPECIOSA. *See* **Bauhinia petiolata.**

CASSANDRA (name of mythological origin). ORD. *Ericaceæ.* A small genus of hardy shrubs, sometimes included under *Andromeda*. *C. calyculata*, distributed throughout the Northern Hemisphere, is the only species known, *C. angustifolia* being merely a form of it. They thrive best in peat or sandy loam. Propagated by layers or by seeds, which latter, being very small, require to be covered lightly with earth.

C. angustifolia (narrow-leaved).* *fl.* snow-white; corolla oblong ovate, with a contracted mouth, on short pedicels, axillary, disposed in the manner of recurved racemes at the tops of the branches. April. *l.* linear-lanceolate, acute, with sub-undulated edges, rusty beneath. *h.* 1ft. to 2ft. Carolina, 1748. SYN. *C. crispa.*

C. calyculata (small-calyxed).* *fl.* snow-white; corolla oblong-cylindrical, on short pedicels; racemes terminal, recurved, leafy. April. *l.* elliptic-oblong, bluntish, obsoletely serrulated, rusty beneath. *h.* 1ft. to 3ft. North America, 1748. There are several unimportant varieties of this species. (B. M. 1280.)

C. crispa (curled). Synonymous with *C. angustifolia.*

CASSAREEP. The concentrated juice of Manihot roots, rendered harmless by boiling.

CASSEBEERA (derivation obscure). ORD. *Filices.* Stove ferns, from Brazil. Sori terminal on the veins, subglobose or oblong, not reaching beyond the branches of a single vein. Involucre inserted distinctly within the margin, and separate from it, of the same shape as the sorus, and pressed down upon it.* For culture, &c., *see* **Ferns.**

C. pinnata (pinnate).* *sti.* 6in. to 12in. long, stout, erect. *fronds* about 6in. each way, pinnate: pinnæ crenate, linear-oblong; margins of the segments much incurved in the mature plant. *sori* in close rows along the margins.

C. triphylla (three-leaved). *sti.* 2in. to 3in. long, slender, wiry. *fronds* digitate, ¾in. each way; segments three to five, nearly equal, linear oblong. *sori* in close rows along the margins of the segments. 1824.

CASSIA (the Greek *kasia* of Dioscorides, from Hebrew *quetsi'oth*). ORD. *Leguminosæ.* A very large genus of shrubs or herbs, containing over two hundred species, few of which are seen in English gardens. Flowers yellow. Leaves abruptly pinnate; leaflets opposite; petioles usually glandular. *C. corymbosa* is about the only species grown, and even this is not frequently met with. They are

Cassia—*continued.*

all of very easy culture and propagation. The stove and greenhouse species thrive well in a compost of maiden loam, sand, and a little peat. *C. corymbosa* may be placed out of doors, in a sheltered warm spot in June; but, so soon as the frost touches the foliage, the plant should be potted up, and, after cutting it back nearly to the old wood, wintered in a cool, frost-proof greenhouse or vinery. The annuals and biennials are increased by seeds, which must be sown in March or April, in a gentle heat; and the shrubby species, by cuttings of half-ripened shoots, which will root in heat, at about the same time of the year. Stove evergreen shrubs, except where otherwise specified.

C. alata (winged-leaved).* *fl.* yellow, large, bracteolate. *l.* with eight to twelve pairs of obovate-oblong glabrous leaflets, outer ones the largest, lower ones approximating to the axils. *h.* 6ft. West Indies, 1731. Shrub.

C. auriculata (small-eared). *fl.* yellow; bracts oval-oblong; racemes axillary. June, July. *l.* with eight to twelve pairs of oval, obtuse, rather mucronate leaflets, which are puberulous when young; petioles glandular. *h.* 4ft. to 6ft. India, 1777. Shrub.

C. bacillaris (rod). *fl.* yellow; racemes axillary, pedunculate. June, July. *l.* with two pairs of ovate, obtuse, oblique leaflets, with a gland on the petiole between the lower pair. *h.* 12ft. to 14ft. South America, West Indies, &c., 1782. Tree.

C. Barclayana (Barclay's). A synonym of *C. Sophora.*

C. biflora (two-flowered). *fl.* yellow; peduncles two to four-flowered, much shorter than the leaves. April, December. *l.* with six to eight pairs of oval-oblong or obovate, rather glabrous leaflets, with a subulate gland on the petiole between the lower pair. *h.* 4ft. to 6ft. South America, 1766. Greenhouse. (B. M. 810.)

C. corymbosa (corymbose).* *fl.* yellow, disposed in numerous corymbs. Summer. *l.* with three pairs of oblong-lanceolate, rather falcate leaflets, which are glabrous as well as the branches, with an oblong gland on the petiole between the lower pair. *h.* 6ft. to 10ft. Buenos Ayres, 1796. Half-hardy.

FIG. 378. FLOWERING BRANCH OF CASSIA MARYLANDICA.

C. emarginata (notched-leaved). *fl.* yellow; racemes axillary, crowded. May, June. *l.* with four pairs of ovate, obtuse, or rather emarginate leaflets, clothed with hairy pubescence beneath, as well as the branches, and glandless petioles. *h.* 15ft. West Indies, &c., 1759. Tree.

C. floribunda (many-flowered). *fl.* yellow; peduncles many-flowered. June, July. *l.* with three to five pairs of oblong-lanceolate, glabrous leaflets, with an oblong gland on the petiole between the lower pair. *h.* 4ft. New Spain, 1818. Stove annual.

Cassia—*continued.*

C. glauca (milky-green). *fl.* sulphur-coloured; racemes axillary, erect, shorter than the leaves. June. *l.* with five to six pairs of oval-oblong leaflets, which are glaucous beneath, puberulous when young; petioles glandular, one gland between each of the three or four lower pairs of leaflets. India, 1800. A tall tree.

C. Herbertiana (Herbert's). Synonymous with *C. lævigata.*

C. humilis (dwarf). A synonym of *C. Tora.*

C. lævigata (smooth). *fl.* yellow. July. *l.* with three to five pairs of ovate-lanceolate, acuminated, glabrous leaflets, with an oblong acutish gland between each of the pairs on the petiole. *h.* 3ft. New Spain. SYN. *C. Herbertiana.* (B. R. 1422.)

C. marylandica (Maryland).* *fl.* yellow; racemes axillary, many-flowered, shorter than the leaves. August, October. *l.* with eight to nine pairs of ovate-oblong, equal, mucronate leaflets, with an ovate gland at the base of the petiole. *h.* 2ft. to 3ft. North America, 1723. This is the only hardy perennial species, and should be grown in a sheltered situation. It thrives in any common garden soil; and may be increased by seeds, or by dividing at the root, in spring. See Fig. 378.

C. nictitans (twinkling). *fl.* yellow; pedicels supra-axillary, very short. July. *l.* with eight to twelve pairs of oblong-linear, obtuse, mucronate leaflets; petioles villous, bearing a somewhat pedicellate gland beneath the lower pair of leaflets. *h.* 1ft. Tropical and sub-tropical America, 1800. Greenhouse annual.

C. occidentalis (western). *fl.* yellow; peduncles short, two to four-flowered, lower ones axillary, the rest disposed in a terminal raceme. May, August. *l.* with four to six pairs of ovate-lanceolate leaflets, with pubescent margins, and with a thick gland at the base of the petiole. *h.* 1ft. to 2ft. South America, 1759. (B. R. 83.)

C. Sophora (Sophora). *fl.*, peduncles axillary and terminal, shorter than the leaves, many-flowered. June. *l.* with six to eight pairs of linear-lanceolate, acute, glabrous leaflets, with a fascicle of glands between each of the pairs of pinnæ, and a large depressed one at the base of the petiole. *h.* 8ft. to 10ft. Australia, &c., 1824. Greenhouse. SYN. *C. Barclayana.* (S. F. A. 32.)

C. tomentosa (tomentose).* *fl.* yellow. July, September. *l.* with six to eight pairs of oval-oblong, obtuse leaflets, which are nearly glabrous above, but clothed with hoary tomentum beneath; petiole furnished with glands, usually with one between each pair of leaflets. *h.* 5ft. to 7ft. Tropical Asia, &c., 1822.

C. Tora (Tora). *fl.* yellow. August. *l.* with three pairs of obovate, obtuse leaflets, with an oblong gland between each of the two lower pairs on the petiole, which ends in a bristle. *h.* 2ft. to 5ft. Tropics, 1693. Stove annual. SYN. *C. humilis.*

CASSIDA. A synonym of **Scutellaria** (which *see*).

CASSINE (the native name given by the American Indians of Florida). ORD. *Celastrineæ.* This genus as now understood is restricted to the species mentioned below. A greenhouse evergreen shrub, with opposite, smooth, coriaceous leaves, and axillary peduncles, bearing small flowers. It grows freely in a mixture of loam and peat; and ripened cuttings will readily strike root, if planted in a pot of sand, with a hand glass placed over them.

C. concava (concave). Synonymous with *Celastrus lucidus.*

C. Maurocenia (the old generic name, after Mauroceni, a Venetian senator and patron of botany). Hottentot Cherry. *fl.* at first greenish-yellow, but changing at length to white; pedicels many, very short. July and August. *l.* sessile, obovate, quite entire, convex. *h.* 6ft. South Africa, 1690.

CASSINIA (named after M. Henri Cassini, an eminent French botanist). ORD. *Compositæ.* A handsome genus of, for the most part, greenhouse shrubs or herbaceous perennials. Flower-heads very numerous, small, disposed in terminal corymbs or panicles; florets tubular; receptacle furnished with linear scales. Leaves alternate, entire, revolute. The species are of easy culture in a loam and peat compost. The annual is increased by seeds only, which must be sown on a warm border during April. The herbaceous and shrubby kinds are propagated in April by dividing at the roots, or by cuttings of half-ripened shoots, placed in sand.

C. aurea (golden). *fl.-heads* yellow. July. *h.* 1ft. New South Wales, 1803. Greenhouse shrub. (B. R. 764.)

C. denticulata (small-toothed).* *fl.-heads* yellow. Summer. *h.* 6ft. to 8ft. New South Wales, 1826. Greenhouse evergreen shrub.

C. spectabilis (showy). *fl.-heads* very pale yellow. July. *l.* lower ones oblong, shortly acuminate, stem-clasping, 4in. to 6in. long, woolly. *h.* 6ft. Australia, 1818. Hardy annual. (B. R. 678.)

CASSIOPE (of classical derivation). ORD. *Ericaceæ.* A genus of small, hardy, Heath-like shrubs, sometimes, but erroneously, included under *Andromeda.* Flowers solitary,

Cassiope—*continued.*

pedunculate, lateral or terminal. Leaves small, imbricated. All the species are delicate little plants, and require great care in their culture. They are best planted in sandy peat, and partially shaded. Propagated by layers.

C. fastigiata (pyramidal). *fl.* white or pale red; corolla campanulate, solitary, pedunculate, produced at the top of the little branchlets. May. *l.* imbricated in four rows, with revolute membranous margins, elongated at top; peduncles woolly. Himalayas. An elegant little shrub, thriving when planted on rockwork in deep, moist, but well drained soil, where it will be carefully guarded from drought, which is fatal to it. (B. M. 4796.)

C. hypnoides (moss-like).* *fl.* small, with a red calyx and white campanulate corolla, solitary, drooping, lateral, on somewhat long pedicels. June. *l.* imbricated, loose, needle-shaped. Lapland and North America, 1750. A small moss-like creeping shrub, forming one of the best and most interesting of alpine plants, and of rather difficult culture. It delights in gritty, moist, but well-drained peat, with full exposure to sun and air. To establish it perfectly, it should be pegged down when first planting; it is also advisable to place a few stones around the neck of the plant on the surface of the soil. Drought is also fatal to its successful cultivation. SYN. *Andromeda hypnoides.* (B. M. 2936.)

FIG. 379. CASSIOPE TETRAGONA.

C. tetragona (four-angled).* *fl.* white; corolla campanulate, somewhat contracted near the mouth, solitary, and rather freely produced. March. *l.* imbricated in four rows, obtuse, pointless, minutely ciliated; margins revolute. *h.* 6in. to 8in. Lapland, 1810. An elegant little evergreen, requiring partial shade, sandy peat or leaf soil, and a moist or semi-bog situation. It has recently been proved to thrive well in a rich yellow loam. See Fig. 379. (B. M. 3181.) In gardens, this is usually called *Andromeda tetragona.*

CASTANEA (from Castanea, a town in Thessaly, or from another town of the same name in Pontus). Chestnut. ORD. *Corylaceæ.* Large, spreading, deciduous trees. Male flowers clustered on long naked cylindrical catkins, with a five to six partite perianth. Female flowers, two or three together in a prickly four-lobed involucre, which eventually completely encloses the glossy brown fruits or nuts. Leaves simple, alternate, stipulate, deciduous, serrated. The nuts are eaten as gathered, or baked and flavoured with salt. In some parts of France, where corn is scarce, Chestnuts are ground up as a substitute for flour. It is, however, very hard when baked. A sandy loam suits the Sweet or Spanish Chestnut best. A warm, rather sheltered site is an important point when the ripening of the fruits is a consideration; but the trees will grow freely, and form good specimens, in almost any position. The young trees must have all side shoots removed, until they form stems of sufficient height.

PROPAGATION is effected by seed, grafting, or budding, but chiefly by seed.

Seed. The ripest and best-formed may be sown as soon as ripe; or they may be kept till February or March. By

Castanea—*continued.*

adopting the latter course, the risk of destruction by rodents, &c., is greatly lessened. Some stratify the nuts in damp sand, during winter, and plant them out in spring, at the same time removing the points of the radicles or growing roots, with a view to making the trees more dwarf and sooner fertile. The simplest way, however, is to sow either in November or February, in drills, 1ft. apart, and 3in. deep, placing the nuts 3in. or 4in. apart in the rows. If the plants make rapid growth, they can be replanted the following November, in drills 3ft. apart, and the plants 2ft. asunder. On good soil, and with proper attention, they will be fit for finally placing out in from three to four years from the time of sowing.

Grafting is resorted to for increasing any good variety for fruiting. All may be perpetuated in this way; but a few are so distinct that a large percentage of similarly good sorts may be expected from their seeds.

Budding may be performed in July, or any time after the buds are sufficiently plump. Good large fruiting varieties are rather scarce, and anyone contemplating growing these, should make sure of getting the best, either from a first-class English nursery, or from the Continent.

PLANTING. The Chestnut looks well planted singly or in groups. In the latter case, from 20ft. to 30ft. apart will be suitable distances, and from three to fifteen trees in a group will give a noble effect. For coppices or underwood, the trees should be planted about 5ft. apart, the coppice being cut every twelve or fifteen years.

C. pumila (dwarf). *fl.* green, yellow. July. Nut solitary, not flattened. *l.* oblong, acute, serrate with pointed teeth, whitened, downy underneath. *h.* 12ft. North America, 1699.

FIG. 380. CATKIN AND FRUIT OF SPANISH CHESTNUT (CASTANEA SATIVA).

C. sativa (cultivated).* Sweet, or Spanish, Chestnut. *fl.* yellowish. July. *fr.* greenish, enclosing a brown nut, ripe in October. *l.* oblong-lanceolate, acuminate, mucronately serrated, glabrous on each side. *h.* 50ft. to 70ft. Asia Minor. SYN. *C. vesca.* See Figs. 380 and 381. The varieties are numerous; but two only need be mentioned as worth growing, in addition to the type, and these are *C. s. foliis aureo-marginatis*, with golden-edged foliage; and *C. s. heterophylla dissecta*, in which the leaves are divided into thread-like segments.

C. vesca (edible). Synonymous with *C. sativa*

FIG. 381. FRUITING BRANCH OF SWEET CHESTNUT (CASTANEA SATIVA).

CASTANOSPERMUM (from *kastanon*, a chestnut, and *sperma*, a seed; in reference to the seeds, which taste like chestnuts). Moreton Bay Chestnut. ORD. *Leguminosæ*. This genus is limited to a single species, which is a large greenhouse evergreen tree, endemic in Australia. For culture, *see* **Ceratonia.**

C. australe (southern). *fl.* saffron-coloured; calyx coloured; racemes axillary or lateral, rather loose. *l.* impari-pinnate; leaflets broad, smooth, entire. *h.* 40ft. to 50ft. 1828.

CASTILLEJA (named in honour of D. Castillejo, a botanist of Cadiz). ORD. *Scrophularineæ*. Herbaceous, rarely suffruticose plants. Flowers axillary, solitary or terminal, and spicate; corolla tubular, compressed, bilabiate. Leaves alternate, entire, trifid or multifid; bracts large and coloured. These are very ornamental plants, but, with one or two exceptions, are rarely seen in cultivation. All are probably more or less parasitic in habit, and this accounts for the difficulty generally experienced in preventing the plants from being altogether lost. All succeed in a peat soil, with a little leaf mould and sand, but some do better in good loam. Hardy and half hardy species may be increased by seeds.

C. coccinea (scarlet).* *fl.* yellow; bracts scarlet. July. *l.*, as well as the coloured bracts, divaricately trifid. *h.* 1ft. North America, 1787. Hardy herbaceous perennial. (B. R. 1136.)

C. indivisa (undivided).* *fl.* greenish-yellow; bracts wholly carmine-red. *l.* sessile, ascending, oblong; upper ones margined with red. *h.* 6in. to 1ft. Texas, 1878. Perennial. Hardy in sheltered positions; best raised from seed annually. (B. M. 6376.)

C. lithospermoides (Lithospermum-like). *fl.* scarlet. August. *h.* 1ft. Mexico, 1848. Half-hardy. (F. d. S. 4, 371.)

C. miniata (vermilion).* *fl.* yellow, with vermilion-scarlet bracts. *l.* lanceolate or linear, entire. *h.* 1ft. to 2ft. California, 1874. Hardy.

C. pallida (pale).* *fl.*, spike simple, with pale, nearly white or yellowish bracts. June. *l.*, radical ones linear, acuminated, entire; superior ones alternate, ovate-lanceolate, toothed. Plant tomentose. *h.* 6in. to 1ft. Siberia and Arctic North-West America. Hardy herbaceous perennial.

CASTILLOA (probably commemorative of Castillejo). A genus (containing two or three species) belonging to

Castilloa—*continued.*

the order *Urticaceæ*, and having male and female flowers, alternating one with the other, on the same branch. *C. elastica* contains a milky juice, yielding Caoutchouc.

CASTOR-OIL PLANT. *See* **Ricinus communis.**

CASUARINA (supposed to be derived from the resemblance of the long, weeping, leafless branches to the drooping feathers of the Cassowary, *Casuarius*, which is a native of the same country as the majority of the *Casuarinas*). Beefwood. ORD. *Casuarineæ*. Very interesting and remarkable greenhouse evergreen trees. Male flowers in cylindrical spikes; perianth of one or two concave or hood-shaped segments. Female flowers in globose or ovoid spikes or cones; perianth none. They thrive well in a compost of loam and peat, with a portion of sand. The stronger growing species do well in loam. Propagated by cuttings, made of half-ripened shoots, in April, and placed in sand, under a bell glass; or by seeds.

C. distyla (two-styled). *fl.* dicecious; scales of cones unarmed, ciliated. Branchlets ovate, round. *h.* 15ft. Australia, 1862. (H. F. T. i., 348.)

C. equisetifolia (Equisetum-leaved). *fl.*, scales of cones unarmed, ciliated. Branchlets flaccid, round. *h.* 15ft. Australia.

C. quadrivalvis (four-valved). Synonymous with *C. stricta*.

C. stricta (upright). *fl.*, scales of cones villous; male sheaths sub-multifid, ciliated. Young branches somewhat flaccid. *h.* 18ft. Australia, 1812. SYN. *C. quadrivalvis*. (H. F. T. i., 347.)

CASUARINEÆ. An order of jointed leafless trees or shrubs, with striated internodes. Flowers unisexual, the males in distinct whorls, forming a cylindrical spike; the females in dense axillary heads, without any perianth. Nuts winged, collected in a cone hidden under the thickened bracts. The only genus is *Casuarina*.

CATALPA (the Indian name of the first species). ORD. *Bignoniaceæ*. Trees with simple leaves, opposite, or disposed three in a whorl. Flowers terminal, panicled; corolla campanulate, with a ventricose tube, and an unequal four-lobed limb. As a single specimen upon the lawn, or occupying the edge or skirting of any moderate-sized, sheltered shrubbery, very few things are superior to a well-grown plant of *C. bignonioides*. It thrives in almost any soil. Propagated by seed sown in spring, by layers, or by cuttings of the ripened shoots, made in autumn. The same cultural remarks are generally applicable to all the species except *longissima* and *microphylla*, which are stove species of easy culture, and are propagated by cuttings made of the ripened shoots, placed in heat, under a glass.

C. bignonioides (Bignonia-like).* *fl.*, corollas white, speckled with purple and yellow; panicles large, branchy, terminal. July. *l.* cordate, flat, three in a whorl, large, deciduous. *h.* 20ft. to 40ft. N. America, 1726. SYN. *C. syringæfolia*. (B. M. 1094). See Fig. 382. The form with bright yellow-tinted leaves is very ornamental.

C. Bungei (Bunge's). *fl.* greenish-yellow, with red spots, large, disposed in simple clusters or racemes. *l.* ovate, acuminate, entire, or lobed, glabrous. *h.* 8ft. to 10ft. North China.

C. Kæmpferi (Kæmpfer's).* *fl.* small, sweet-scented, disposed in branching panicles; corolla clear yellow, spotted with reddish-brown; lobes toothed. July. *l.* ovate, cordate at the base, abruptly sharp-pointed, and often with one or more sharp-pointed lateral lobes. Japan, 1862.

C. longissima (longest).* *fl.*, corolla whitish, undulating, crenated,; upper segment marginate. *l.* oblong, or ovate lanceolate, acuminated, three in a whorl, undulated. *h.* 30ft. to 40ft. West Indies, 1777.

C. microphylla (small-leaved). *fl.* white, large; limb undulated; peduncles terminal, usually three-flowered. *l.* opposite, obovate, obtuse. *h.* 10ft. to 20ft. St. Domingo, 1820.

C. speciosa (beautiful).* *fl.* white, large, disposed in rather large panicles; upper lip of the corolla longer than the lower, which is bilobed. June. United States, 1879. This comes close to

Catalpa—*continued.*

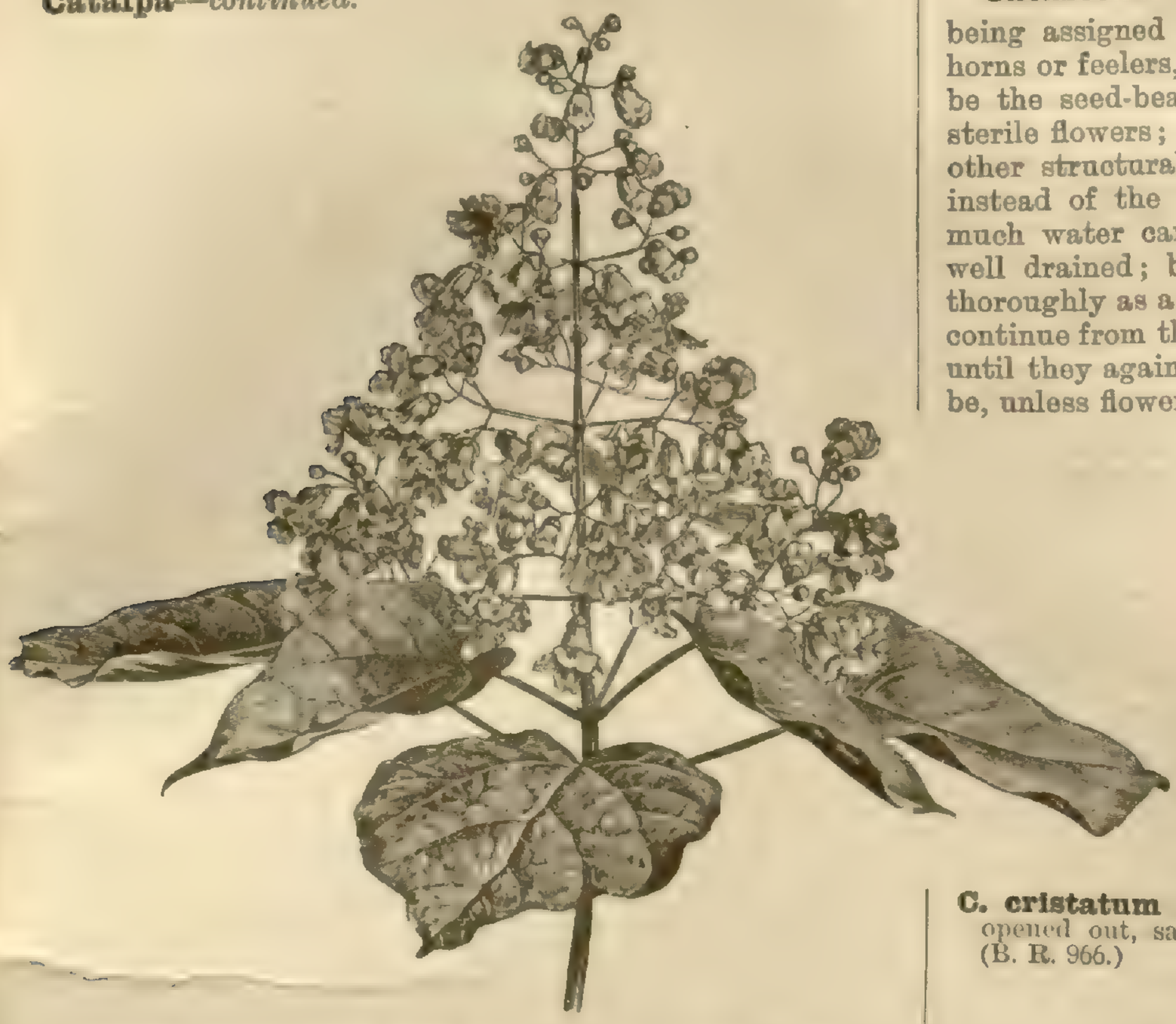

FIG. 382. FLOWERING BRANCH OF CATALPA BIGNONIOIDES.

C. bignonioides, but may be distinguished from that species chiefly by its softly downy, slender, acuminate and inodorous leaves, marked with similar glands in the axils of the principal veins on the under side; by its much less crowded racemes, and by its much larger flower, fruit, and seed.

C. syringæfolia (Syringa-leaved). A synonym of *C. bignonioides*.

CATANANCHE (from *katanangke*, a strong incentive; referring to an ancient custom among the Greek women of using it in love potions). ORD. *Compositæ*. Very pretty and free-growing annuals or perennials. Pappus scaly pointed; involucre scarious; florets all ligulate; heads solitary, on long stalks. They thrive in ordinary border soil. Increased by seeds, which should be sown in March or April, and the young plants, when large enough, potted off or pricked out in the position they are intended to occupy. The flowers are very useful for cutting.

C. cærulea (blue). *fl.-heads* blue, or blue and white. August. *l.* hoary, narrow, lanceolate, with one or two little teeth on each side. *h.* 3ft. South Europe, 1596. Hardy perennial. The form producing blue and white flowers is known in gardens as *C. bicolor*. See Fig. 383. (B. M. 293.)

C. lutea (yellow). *fl.-heads* yellow. June. *h.* 1ft. *l.* similar to those of *C. cærulea*. South Europe, 1640. Hardy annual. (S. F. G. 821.)

CATASETUM (from *kata*, downward, and *seta*, a bristle; referring to the position of the two horns of the column). ORD. *Orchideæ*. A large genus of strong, rapid-growing stove epiphytes, more curious than beautiful. Flowers generally green, in erect or drooping racemes from the base of the stem; sepals and petals of a firm, leathery texture. Leaves plaited, membranous. It is probable that if better known, this genus, as well as its allies, *Cycnoches* and *Mormodes*, would be more generally cultivated, as the singular structure of their flowers always commands a considerable amount of interest; while the manner in which the pollen masses of the Catasetums are ejected, is in itself a great curiosity. Another characteristic of the Catasetums and Cycnoches is the occasional production of two or three kinds of flowers on the same plant, sometimes on the same flower-spike. So dissimilar are these flowers, that, when first observed, they were considered to belong to distinct genera, and named respectively *Catasetum*, *Monachanthus*, and *Myanthus*, the first name

Catasetum—*continued.*

being assigned to the large fleshy flowers furnished with horns or feelers, and which are now generally considered to be the seed-bearing flowers; the second to the hornless, sterile flowers; and the last to those which, together with other structural differences, bear the horns at the base, instead of the apex, of the column. When growing, too much water can scarcely be given them, provided they be well drained; but, when resting, they should be dried as thoroughly as a deciduous Dendrobe; the resting period to continue from the time the new growths are fully completed until they again begin to grow, no matter how long it may be, unless flower-spikes appear, in which case water should be given until the flowers are decayed. Catasetums may be grown with considerable success in pots, but baskets are much more satisfactory.

C. barbatum (bearded). *fl.*, sepals and petals narrow, green, and blotched with purple; lip green and pink, outer edge fringed, delicate fibres of a dull white, like a beard. May. Demerara, 1836. (B. R. 1778.)

C. callosum (hardened).* *fl.* brownish-yellow; petals linear-lanceolate, same form as dorsal sepal; lip ovate-oblong, obtuse, saccate towards the base, crenated and furnished above the sac with a large orange-coloured callosity; column acuminate. June. *h.* 1ft. La Guayra, 1840. (B. M. 4219.)

C. cristatum (crested). *fl.* greenish; perianth spreading; lip opened out, saccate, crested. August. *h.* 2ft. Brazil, 1823. (B. R. 966.)

FIG. 383. CATANANCHE CÆRULEA.

C. maculatum (spotted).* *fl.* green, spotted with purple, two inner calycine segments spotted; lip ciliated. September. *h.* 3ft. Mexico. (B. R. 26, 62.)

Catasetum—*continued.*

C. Naso (nose-like-lipped). *fl.* white, purple; sepals oblong-lanceolate, complicate, equal to the ascending lanceolate petals; lip hemispherical, drawn out into an abrupt ovate fleshy blunt appendage at the apex, lacerated at the base; spikes short, erect. August. *h.* 2ft. Mexico, 1843.

C. ochraceum (reddish-yellow). *fl.* yellow; sepals and petals ovate, secund; lip cucullate, entire, smooth, contracted into a short, broad, blunt, fleshy beak at the apex. Brazil, 1844.

C. Russellianum (Russell's).* *fl.* greenish; lip membranous, inflated in front, contracted at the mouth, the inner margin drawn out, undulated and fringe-crested in the disk. July. *l.* broad, lanceolate. *h.* 3ft. Guatemala, 1838.

C. saccatum (pouched).* *fl.* very large and extraordinary; sepals and petals spotted with rich purple; lip bright yellow, thickly covered with crimson spots; it is bored, as it were, in the middle, by a narrow opening, which leads into a deep chamber or sac, which is not observed till the back of the lip is turned up. March. Demerara, 1840. (L. S. O. 41.)

C. scurra (dandy). *fl.* pale straw-colour or waxy white, fragrant. *l.* lively green, about 6in. long; bulbs about 1½in. long. Demerara, 1872. Very curious, and with a compact habit. (G. C. n. s. vii., p. 304.)

C. tabulare (table-formed-lip). *fl.* pale green. Guatemala, 1843.

C. tridentatum (three-toothed). *fl.* yellowish-brown; two inner sepals spotted; lip galeate, three-toothed. April. Trinidad, 1822.

CATCHFLY. *See* **Silene.**

CATECHU. *See* **Areca Catechu.**

CATERPILLARS, WEB-FORMING. *See* **Hawthorn Caterpillars.**

CATESBÆA (founded by Linnæus, in honour of his contemporary, Mark Catesby, author of "Natural History of Carolina"). Lily Thorn. ORD. *Rubiaceæ.* Stove evergreen glabrous shrubs, bearing supra-axillary, simple spines. Flowers axillary, solitary; corolla funnel-shaped, with a very long tube, gradually widening and dilated to the throat, and a four-parted limb. Leaves small, oval, usually in fascicles. These are very ornamental plants while in bloom. They grow best in a mixture of light turfy loam and peat. Cuttings will root in April, if planted in sand, and plunged in heat, with a bell glass placed over them. Insects often infest these plants and considerably impair their beauty; therefore, necessary precautions should be taken.

C. latifolia (broad-leaved).* *fl.* pendulous; tube of corolla very long, obconical at the apex; pedicels one-flowered. June. *l.* obovate, shining, convex, rather shorter than the spines. *h.* 4ft. to 5ft. West Indies, 1823. (B. R. 858.)

C. parviflora (small-flowered). *fl.* erect; corolla with a tetragonal tube, about four lines long, sessile among the leaves. June. *l.* ovate, stiff, with revolute margins, mucronate. *h.* 4ft. to 5ft. Jamaica, 1810.

C. spinosa (spiny). *fl.* pendulous; corolla pale yellow, 3in. to 6in. long. May. *l.* ovate, acutish at both ends, rather longer than the spines. *h.* 10ft. to 14ft. Bahama Islands, 1726. (B. M. 131.)

CATHA (a name of Arabian origin). ORD. *Celastrineæ.* A monotypic genus. Flowers small; cymes short, axillary, dichotomously branched. Leaves opposite, petiolate, lanceolate, leathery, serrated. For culture, *see* **Celastrus.**

C. edulis (edible). Cafta or Khât. *fl.* white. *h.* 10ft. Yemen, Arabia. The green leaves of this tree are eaten with avidity by the Arabs, and possess nearly the same qualities as opium. Greenhouse or cool conservatory. SYN. *Celastrus edulis.*

CATHARTIC. *See* **Purgative.**

CATHCARTIA (in honour of J. F. Cathcart, Esq., B.C.S., Judge of Tirhoots). ORD. *Papaveraceæ.* A very pretty herbaceous biennial, thriving well in any light rich soil, if the situation is sheltered and sunny. Increased by seeds, which it produces freely.

C. villosa (hairy). *fl.* rich yellow, with numerous brown anthers, about 2in. across. June. *l.* vine-shaped, 3in. across, densely villose. *h.* 1ft. Sikkim-Himalaya, 1850. (B. M. 4596.)

CATKIN. A deciduous spike, consisting of unisexual apetalous flowers. An amentum.

CATMINT. *See* **Nepeta.**

CATOBLASTUS (from *kato*, beneath, and *blastos*, growth, in allusion to the aërial roots). ORD. *Palmeæ.* A small genus of two or three stove palms, closely allied to *Iriartea*, but differing from that genus in the male and female flowers being borne on separate spikes, the males having a small rudimentary ovary in addition to the nine to fifteen stamens; whilst the females have scarcely any rudimentary stamens. Trees having, in their native habitats, trunks from 30ft. to 50ft. high, distinctly marked with circular scars, supported, a short distance above the level of the ground, upon a tuft of aërial roots, and bearing a crown of pinnate leaves. The undermentioned is the only species in cultivation. For culture, *see* **Iriartea.**

C. præmorsus (bitten off).* *l.* impari-pinnate; leaflets simple. Venezuela, 1850. SYN. *Iriartea præmorsa.*

CATOPSIS (from *kato*, beneath, and *opsis*, appearance). ORD. *Bromeliaceæ.* A small genus of stove herbaceous plants, formerly included under **Tillandsia** (which *see* for culture).

C. nitida (shining). *fl.* white, remotely disposed in rather long slender spikes; corolla deeply three-parted; scape cylindrical. *l.* few, lingulate, convolute, forming below a hollow tube, which is swollen or ventricose at the base; very shining dark green. Jamaica, 1823. SYNS. *Tillandsia nitida* and *Tussacia nitida.* (H. E. F. 218.)

CAT'S TAIL. *See* **Typha.**

CAT'S-TAIL GRASS. *See* **Phleum.**

CAT THYME. *See* **Teucrium Marum.**

CATTLEYA (named in honour of William Cattley, Esq., of Barnet, Herts, a famous patron of botany, and one of the most ardent collectors of rare plants of his day). ORD. *Orchideæ.* A magnificent evergreen genus, which occupies the first rank in the estimation of orchid growers, both on account of the great size of the flowers—often 7in. or 8in. across—and also from their rich and varied colours. In addition to these qualifications, they are, with one or two exceptions, extremely easy to manage. This genus has much in common with *Lælia*, from which it is technically distinguished by possessing four pollinia or pollen masses instead of eight. The flower-scape, which is enclosed in a sheath, rises from the top of the pseudo-bulb, a single spike sometimes containing nine perfect flowers, and occasionally many more, which last a considerable time in beauty. They vary considerably in size; for, whilst some species make pseudo-bulbs only some 2in. or 3in. long, others reach as many feet in height, forming, in a natural state, huge masses several yards in diameter. They all form pseudo-bulbs, which are more or less stout in the different species, and usually bear a single, dark green, coriaceous leaf upon the apex. One division of the genus produces two leaves upon the summit of the pseudo-bulbs, and sometimes, but more rarely, three are developed. Generally speaking, however, the largest-flowered species are to be found among those with single leaves. We have now many varieties which have been produced by hybridising, and these, both for size of flower and the marvellous beauty of their markings, may vie with the choicest of the introduced kinds. Many of these plants thrive best when attached to a block of wood—with a little sphagnum—suspended from the roof; pot culture, however, for those which attain any considerable size, will be best, as they will not only if grown in this manner produce the finest blossoms, but will require less care and attention at the hands of the cultivator. For potting material, use good fibrous peat from which all the gritty part has been well beaten; add to this some chopped living sphagnum, and some clean, sharp silver sand. Thorough drainage is most essential; and, in potting, let the plant sit upon the top of the soil, which should be elevated somewhat above the rim of the pot, in order to carry the water away quickly. Cattleyas like a genial, moist atmosphere, and an abundant supply of water during the growing season, which should be administered from the watering can; for, in the case of those plants grown in pots, it has been frequently remarked that, where regularly syringed, they neither grew

Cattleya—*continued.*

nor flowered so well. When grown suspended from the roof upon blocks of wood, there is nothing to fear from the syringe, because the water is not so likely to lodge in the large sheathing scales which envelop the young growth. This, however, may easily occur to those in pots, and is very detrimental to the miniature pseudo-bulbs. The syringe should not be depended upon entirely as a supply to those plants grown upon blocks; but, during summer, they should be carefully taken down, two or three times a week, and immersed in a tub or pan of water, which should be at least of the same temperature as the house they are growing in. After the pseudo-bulbs are formed, water must be withheld, and the plants allowed a season of rest; but care should be taken to prevent them becoming exhausted during this period, as much injury may arise if the withholding of water be carried to excess. A long season of rest will cause the plants to flower more freely, and to grow more vigorously afterwards. In our enumeration of the best species and varieties, we have derived considerable information from the works of Lindley, Warner and Williams, &c. New and distinct hybrids are constantly produced.

C. Aclandiæ (Acland's).* *fl.* twin; sepals and petals usually chocolate-brown, barred with irregular transverse bands and streaks of yellow; lip large, spreading, varying from rich rose to almost deep purple; base of lip too narrow and too spreading to cover the column. July. *l.* ovate, coriaceous, dark green. Pseudo-bulbs slender, 5in. to 6in. high. Brazil, 1839. (B. M. 5039.)

C. amethystoglossa (amethyst-tongued).* *fl.* about 5in. in diameter; sepals and petals rosy-lilac, beautifully spotted and blotched with purple; lip wholly of a rich deep purple or amethyst hue; scape erect, many-flowered. March to May. *l.* dark green, leathery, borne upon the apex of the pseudo-bulbs. *h.* 2ft. to 3ft. Brazil, 1862. (B. M. 5683.) The variety *sulphurea* is very pretty, with the ground colour of the flower pure yellow, and spotted, as in the type; lip broad, of a rich cream-colour. 1866. (G. C. 1866, 315.)

FIG. 384. FLOWER OF CATTLEYA BICOLOR.

C. bicolor (two-coloured).* *fl.*, sepals and petals of a peculiar brownish-green hue; lip long, narrow, of a rosy-purple colour, which becomes paler towards the margin; spikes eight to ten-flowered. September. *h.* 1½ft. to 2ft. Brazil, 1837. In the best varieties, it is rich magenta, with an interrupted white-fringed margin; the blossoms have the fragrance of the garden Pink. See Fig. 384. (B. M. 4909.)

C. chocoensis (Choco).* *fl.* large, not fully expanded like the majority of this genus, somewhat campanulate in shape; sepals and petals pure white, broad, more or less fringed at the edges; lip yellow, stained in front with rich purple. Pseudo-bulbs bearing a single oblong, stout leaf. Choco, New Grenada, 1873. (I. H. n. s. 120.)

C. citrina (citron-flowered).* *fl.* of a bright uniform lemon-yellow colour, most deliciously perfumed, solitary, from the latest developed pseudo-bulbs, of a stout and waxy consistence. May to August. *l.* from 6in. to 10in. long, and about 1in. broad, pale glaucous. Pseudo-bulbs small, oval, covered with a silvery membrane when young; two or three-leaved. Mexico, 1838. This beautiful species is generally grown upon a block of wood, with just a small portion of sphagnum; but we have seen it well grown in pans, just like any other Cattleya; the atmosphere should be moist and the temperature very cool. See Fig. 385. (B. M. 3742.)

C. crispa (curled).* *fl.* 4in. to 5in. across; sepals and petals white, or white suffused with lilac; lip crimson velvet, with a narrow white crisp margin; spikes strong, frequently four or five-flowered. July, August. Pseudo-bulbs clavate, from 12in. to 14in. high, one-leaved. Brazil, 1826. (B. M. 3910.) The variety *superba* is a magnificent one, with a rich crimson and beautifully-fringed lip.

C. Dawsoni (Dawson's).* *fl.* 6in. or 7in. in diameter; sepals and petals delicate rosy-purple; lip large, the upper part straw-colour or yellow, the rest of a beautiful roseate hue, and the margin fringed; clusters three or four-flowered. *l.* dark green, of unusual thickness. *h.* 1ft. Brazil, 1863. (W. S. O. 16.)

C. Devoniana (Devon).* *fl.* upwards of 5in. in diameter; sepals and petals white, tinged with pink, which becomes deeper towards the points; lip deep rosy-purple. September. *l.* in twos, 6in. or 8in. long. A beautiful hybrid.

C. dolosa (deceptive).* *fl.* beautiful pink; lip with a yellow disk. *l.* twin, 4in. long, 2½in. broad, oval. Pseudo-bulbs 5in. or 6in. long. A pretty novelty. (G. C. n. s., v., 430.)

C. Dominiana (Dominy's).* *fl.* 6in. in diameter; sepals and petals white, delicately shaded with pink; lip rosy-purple, edged with white, and deep orange in the throat. A very fine hybrid. The variety *alba* has pure white flowers, with a lip having a lilac blotch in the centre; *lutea* has delicate blush flowers, and the lip white in front, suffused with yellow, the disk yellow, streaked with rose.

C. Dowiana (Dow's).* *fl.* very large; sepals and petals of a bright nankeen colour; lip large and spreading, beautifully frilled on the margin, and wholly of an intense rich purple, shaded with violet rose, and beautifully streaked with lines of gold; scape five or six-flowered. Autumn. It produces stout pseudo-bulbs, and leaves about 1ft. high. Costa Rica, 1866. This species is best grown in baskets, as near the light as possible; it also requires more heat than is usually allowed to Cattleyas. (B. M. 5618.)

C. eldorado (El Dorado).* *fl.* large; sepals and petals pale pink; lip of same colour outside, purplish-crimson towards the front, and stained with orange in the throat, serrated at the edges. August, September. This rare and beautiful species has pseudo-bulbs, which support a single, large, deep green leaf. Central America, 1869. The variety *splendens* is very superior; sepals and petals clear rose, the latter much broader and serrated at the edges; lip large; throat rich deep orange, succeeded by a circle of white, which is again followed by rich violet-purple, extending to the front and round the whole margins, where it is finely serrated. Rio Negro, 1870. (I. H. 1870, 7.)

C. exoniensis (Exeter).* *fl.*, sepals and petals soft rosy-lilac; lip very large, of an intense rich shining purple, with a white marginal border, the throat being suffused with rich golden yellow. A very splendid hybrid between *C. Mossiæ* and *Lælia purpurata*. (F. M. 269.)

C. gigas (giant).* *fl.* very large; sepals and petals pale rose; lip large and broad, rich deep purple or crimson-violet in front, and having two conspicuous eye-like yellow blotches at the base; scape four or five-flowered. April and May. Tropical America, 1873. (G. C. n. s. 17, p. 343.)

C. g. Sanderiana (Sander's). A very handsome variety, remarkable for the large spreading lip, of a rich amethyst, grained with white. 1883.

C. granulosa (granulated-lipped).* *fl.* olive-coloured, with rich brown spots, large; lips whitish, spotted with crimson. August, September. Guatemala, 1841. (B. R. 28, 1.)

C. guatemalensis (Guatemalan).* *fl.* produced in large clusters; sepals and petals rosy-purple and buff; lip reddish-purple and orange, with a few crimson lines. Guatemala, 1861. Distinct and pretty

Cattleya—*continued.*

FIG. 385. CATTLEYA CITRINA.

C. guttata (spotted).* *fl.*, sepals and petals green, tinted with yellow and dotted with crimson; lip white, stained with purple; scape erect, five to ten-flowered. October and November. *l.* twin, coriaceous, dark green, growing upon the apex of the pseudo-bulbs. *h.* 1½ft. to 2ft. Brazil, 1827. (B. R. 1406.)

C. g. Leopoldii (Leopold's).* *fl.* very fragrant, and more numerous than those of the type; sepals and petals deep chocolate, with dark red spots; lip wholly of a rich red-purple. Brazil. (F. d. S. 14, 1471.)

C. g. Russelliana (Russell's).* A beautiful variety, from the Organ Mountains; it is altogether a taller and larger plant, with much handsomer and darker flowers. 1838. Very rare. (B. M. 3693.)

C. Harrisoniæ (Harrison's).* *fl.* of a beautiful rose-colour; lip slightly tinged with yellow. July to October. *h.* nearly 2ft. Brazil. A noble free-flowering species. The variety *violacea* has beautiful violet flowers; lip of the same colour, with a little yellow in the centre. (P. M. B. 4, 247.)

C. intermedia (intermediate).* *fl.*, sepals and petals soft rose or rosy-purple; lip of the same colour, blotched in front with deep violet-purple. May to July. *h.* 1ft. Brazil, 1824. (B. M. 2851.) There are several varieties of this most useful species, the best two of which are the following:

C. i. superba (superb).* *fl.* four to six on a spike; sepals and petals of a delicate rose; lip broad, rich purple. Brazil.

C. i. violacea (violet). *fl.* often nine on a spike; sepals and petals delicate rose colour; lip with a rich purple spot in the centre. May and June. Brazil.

C. labiata (lipped).* *fl.* large, 6in. or 7in. in diameter, three or four on a spike; sepals and petals of a deep rose colour, the latter being beautifully waved, very broad; lip large, somewhat hooded, the front portion being of an intense deep velvety-crimson. Late autumn. *l.* solitary, broad, leathery, dark green. *h.* 1½ft. to 2ft. Brazil, 1818.

C. l. pallida (pale). *fl.*, sepals and petals light pink; lip crimson, beautifully fringed. August. *l.* upright, of a lighter green than the type. Brazil.

C. l. Pescatorei (Pescatore's).* *fl.*, sepals and petals light rose-colour; lip rich crimson. A very beautiful variety, with light green foliage and free-blooming habit.

C. l. picta (painted).* *fl.* large, very handsome when well expanded, and often measuring 7in. across; sepals and petals pure white; lip of the richest crimson, and beautifully fringed. June, July. *h.* 1ft. The flowers are but sparingly produced, and are often deformed.

C. Lemoniana (Lemon's). *fl.* pale pink, with yellow in the centre of the lip. Summer. *l.* light green. *h.* 1ft. Brazil, 1842. Very close to *C. Mossiæ*. (B. R. 32, 35.)

C. lobata (lobed). *fl.* deep rich rose. May, June. Brazil, 1847. A charming species, much like *C. crispa* in growth, but shorter, both in bulb and leaf. It is rarely seen, on account of its very shy-flowering propensities. (G. C. 1848, 403.)

C. Loddigesii (Loddiges'). *fl.* three or four on a spike; sepals and petals pale rose colour, tinged with lilac; lip light rose, marked with yellow. August, September. *h.* 1ft. Brazil, 1815. (L. B. C. 37.)

C. marginata (margined).* *fl.* large, delicately perfumed, usually solitary; sepals and petals rosy-crimson; lip deep rose, margined with white. September and October. Pseudo-bulbs slender, seldom exceeding 6in. in height, and bearing upon the apex a single oblong light green leaf. Brazil, 1843. A rather shy and slow-growing species, of which there are many beautiful varieties. It grows best when suspended from the roof of the house, on a block of wood, with a little sphagnum. (P. M. B. 10, 265.)

C. maxima (large).* *fl.* rose-coloured throughout, of a pale hue when they first expand, which gradually becomes deeper; lip very large, almost white, beautifully ornamented with dark purplish-crimson veins, and streaked in the centre with orange colour; spikes many-flowered. Winter. Its main peculiarities consist in its long-channelled pseudo-bulbs, and its very convex, waxy petals. *h.* 1ft. to 1½ft. Columbia, 1844. (B. M. 4902.) There are several varieties of this species.

C. McMorlandii (McMorland's). *fl.* about 6in. in diameter; sepals and petals beautiful light rose; lip yellow and fringed. June, July. *l.* dark green. *h.* 1ft. Brazil.

C. Mendelii (Mendell's).* *fl.*, sepals and petals varying from white to a light pink, large and broad; lip large, of a rich magenta colour. April and May. South America. A very fine species, of recent introduction.

C. M. Selbornensis (Selborne's). A splendid variety, with large flowers; lip very richly coloured; petals and sepals of a beautiful rosy-purple.

C. Mossiæ (Moss's).* *fl.* 5in. or 6in. across, sometimes more; although they vary very much, the sepals and petals are usually of some shade of blush or deep rose; lip large, of the same colour, in most instances beautifully fringed or crimped round the edge; scape three to five-flowered. May, June. *l.* solitary, dark, shining green, borne upon the apex of the stout pseudo-bulbs. *h.* 1ft. La Guayra, 1836. (B. M. 3669.) Without exaggeration, this species may be said to rank among the most magnificent of orchids in cultivation. The varieties are extremely numerous, and, in many instances, very distinct. Mr. Williams describes nearly thirty; but the major number of these are very rare, and perhaps not a few unique. The following selection comprises the principal ones:

C. M. aurantiaca (orange).* A very handsome variety, remarkable for the deep orange hue of the centre of the labellum. Venezuela.

C. M. aurea (golden). *fl.* small; sepals and petals blush, less spreading than in most other forms; lip small, strongly marked with buff-orange at the base, extending forward at the front edge, and having broken violet-rose lines in the centre, surrounded by a very broad pale margin, which is almost white inwards, and tinged with blush on the extreme edge.

C. M. a. grandiflora (large-flowered).* *fl.* large; sepals and petals blush; lip marked with a bar and a few broken lines

Cattleya—*continued.*

of violet-rose, very much stained with orange at the base, and towards the upper part of the margin.

C. M. grandiflora (large-flowered).* *fl.* large; sepals and petals blush, the latter less frilled than in some forms; lip of a deep rich purple-rose, slightly stained at the base with orange, and having a narrow even edge of pale blush.

C. M. grandis (grand).* The largest of all the forms in respect to the size of its lip; sepals and petals pale blush; lip mottled violet-rose, with an irregular blush-coloured edge; the base stained with buff-orange. A splendid plant.

C. M. Laurenciana (Lawrence's).* *fl.* large; sepals and petals blush, the latter very broad, and considerably frilled; lip large, rich deep violet-rose, slightly stained with orange in the interior, veined and mottled in front, with a narrowish and nearly even frill of blush.

C. M. majestica (majestic).* *fl.* very fine; sepals and petals broad, the latter measuring upwards of 9in. from tip to tip, and of a dark rose colour; lip large and spreading, having the edge beautifully fringed, ground colour dark rose, stained at the base with soft orange, and variously blotched and streaked in front with violet-purple. Pseudo-bulbs 3in. high, bearing a broad single leaf about 6in. long.

C. M. Marianæ (Marian's).* *fl.* small, but very distinct and chaste; sepals and petals white; lip with a bright yellow stain at the base, prettily mottled with violet-rose in the centre, and broadly and evenly margined with white. A very rare and beautiful form.

C. M. splendens (splendid). *fl.* large; sepals and petals blush; lip rich full purple-rose, with orange base, the margins blush, and very much frilled.

C. M. superba (superb).* *fl.*, sepals and petals dark blush, the latter narrow and very slightly frilled; lip large, prominently stained with deep orange at the base, the front part brighter, and the centre veined and somewhat mottled with violet-rose, leaving a broadish, irregular, pale margin.

C. M. Williamsii (Williams's). *fl.* large; sepals and petals blush white; lip finely mottled with rose, stained with orange at the base, and having a broad pale margin.

C. nobilior (nobler). *fl.* 5in. across, of a lovely deep rose-pink colour; lip conspicuously blotched with creamy-white on the front lobe. *l.* twin, ovate, thick, leathery. Pseudo-bulbs 4in. to 6in. long, cylindrical. Brazil, 1883. A species allied to *C. dolosa* and *C. Walkeriana*. (G. C. n. s., xix. 728.)

C. pumila (dwarf). *fl.* rose coloured, with a crimson lip, often edged with white. September. *h.* 6in. Brazil. A very pretty species. (B. M. 3656.)

C. quadricolor (four-coloured). *fl.*, sepals and petals light rose; lip of same colour, yellow on the upper part. May. New Grenada, 1865. Very rare and pretty. (B. M. 5504.)

C. quinquecolor (five-coloured). *fl.*, sepals and petals light olive-green, spotted with brown and dark chocolate; lip white, with a yellow blotch, veined with rose. A very pretty hybrid.

C. Regnellii (Regnell's).* *fl.* large, 3in. to 4in. in diameter; sepals and petals pale green, tinged with olive, and more or less spotted with rosy-purple; lip large, spreading; ground colour amethyst, tinged with rosy-purple, this is set off by a neat marginal border of white, whilst the throat is stained with yellow; scape erect, three to five-flowered. July, and again in September. *l.* twin, sometimes tern, thick, fleshy, dark green. Pseudo-bulbs usually about 4in. or 5in. high. Brazil. (W. S. O. ser. ii., 22.)

C. Schilleriana (Schiller's). A charming species, very like *C. Aclandiæ*, but with darker and rounder foliage; the flowers are also darker. Brazil, 1857. (F. d. S. 2286.)

C. Sedeniana (Seden's).* *fl.* large; sepals and petals light rose, shaded with green; lip with a white fimbriated margin, centre purple, with darker veins. A very handsome hybrid.

C. Skinneri (Skinner's).* *fl.* rosy-purple, very slightly tinged with purple; base of lip white; the column is shorter than in most of the species. April and May. *l.* twin, fleshy, light green. Pseudo-bulbs 12in. to 18in. high. Guatemala, 1836. An old, but still eminently useful, species. (B. M. 4270.)

C. speciosissima (showiest).* *fl.* large, often 8in. in diameter; sepals and petals broad, soft flesh-colour, the latter broadest, with erose edges; the lip forms a circle, through closing over the column, the front portion being of an intense amethyst colour, varied with white and yellow markings towards the centre, where

Cattleya—*continued.*

are also several lines of bright amethyst; spike rather short, three or four-flowered. *l.* ovate, shining. Pseudo-bulbs oblong, deeply channelled. Venezuela, 1868.

C. superba (superb). *fl.* deep rose, with a rich crimson lip; spikes three or four-flowered. June. *h.* 10in. Guiana, 1838. A very handsome but slow-growing species. The variety *splendens* has much larger flowers, and the lip is white at the base, rosy-violet in front, and with several lines of golden yellow towards the middle.

C. Trianæ (Triana's).* *fl.* several inches in diameter; sepals and petals usually blush; lip blush, or pale rose outside; throat orange or yellow, front rich purple, more or less intense; scape many-flowered. Winter. Cordilleras of Quindiu, 1856. This is an extremely variable species, and consequently varieties are numerous. See Fig. 386.

FIG. 386. CATTLEYA TRIANÆ.

C. T. Atalanta (Atalanta). *fl.* white, shaded with rose; petals broader and more pointed than the sepals; lip about 3in. long, pale rose, with a broad band of orange in the throat.

C. T. Colemanii (Coleman's).* *fl.* 8in. across; sepals and petals tipped with rose; throat elegantly striped with various shades of yellow; lip deep rose, well fimbriated. 1875.

C. T. Dodgsonii (Dodgson's). *fl.* white, 8in. to 9in. in diameter; lip deep crimson; throat orange-yellow.

C. T. Hilli (Hill's).* *fl.* pure white, large, very distinct; lip rich magenta; throat yellowish.

C. T. Io.* *fl.* as large as those of the variety *Hilli*; sepals and petals clear rose; petals finely serrated at the margins; lip large, rich deep purple, shaded with violet; an orange throat and marginal band of rosy purple; edges finely crisped.

Cattleya—*continued.*

C. T. Russelliana (Russell's). *fl.*, sepals 3½in. long, more than 1in. broad; petals white, tinged with rose, upwards of 2in. broad, waved at the edges, and recurved; lip 3in. long, basal part rose, but rich deep rosy-purple in front, shaded with violet; the centre of the lip and throat bright orange, and the edge finely curled.

C. T. velutina (velvety).* *fl.* very fragrant; sepals and petals pale orange, spotted and streaked with purple; lip orange at the base, white, with violet veins in front, where the surface is velvety. Brazil, 1870. This pretty form resembles *C. bicolor* in growth.

C. tricolor (three-coloured). *fl.*, sepals and petals creamy-white; lip same colour, with a yellow throat and a band of carmine near the margin. 1883. A very distinct species, having flowers about the size of *C. Skinneri*.

C. tuberosa (tuberose). Synonymous with *C. Walkeriana*.

C. Wageneri (Wageneri's).* *fl.* snow-white, excepting a stain of rich yellow in the centre of the lip, the margin of which, as of the petals, is beautifully divided. June. Caraccas, 1851. In habit, this species is like a rather slender form of *C. Mossiæ*. (R. X. O. 1, 13.)

C. Walkeriana (Walker's).* *fl.* rose-coloured, 5in. across, very sweet-scented; lip richer rose, with a slight tinge of yellow; scape usually two-flowered. *h.* 4in. Brazil, 1844. An elegant dwarf species, best grown on a block of wood suspended from the roof, allowing it plenty of light, but not too much sun. SYN. *C. tuberosa*. (P. F. G. 3.)

C. Warneri (Warner's).* *fl.* about 6in. across; sepals and petals broad, deep rose colour; lip large, with its middle lobe much expanded, of deep rich crimson, ornamented in front with an elegant marginal fringe; scape many-flowered. Brazil, 1862. A robust and fine species, much resembling *C. labiata* in habit. (W. S. O. 8.)

C. W. delicata (delicate). *fl.* white, 6in. across; lip large, with a beautiful yellow centre and tinge of rose, white on the outside. (W. S. O. 4.)

C. W. d. superba (superb)* is a splendid form, with very large and finely expanded lip, and broad pure white sepals and petals.

C. W. sudburyensis (Sudbury). A splendid variety, with an unusually large lip of rich amethyst-purple, edged with a frilling of white, and also white in the throat. 1883.

C. Warscewiczii (Warscewicz's).* *fl.* large; sepals and petals purplish-white; lip rich crimson. Winter. *l.* light green. *h.* 1ft. New Grenada, 1867. (R. X. O. i, 31.)

CAUDATE. Tailed; having a process like a tail.

CAUDEX. The axis of the plant. Generally applied to the trunk or stem of palms and ferns.

CAUDICLE. The cartilaginous strap which connects certain kinds of pollen masses to the stigma.

CAULESCENT. Acquiring a stem; having a kind of stem.

CAULIFLOWER. A garden variety of *Brassica oleracea*, in which the inflorescence, while young, is condensed into a depressed, fleshy, edible head. This differs from Broccoli in being more tender, of finer flavour, and in use more as a summer and autumn vegetable. When at its best, a Cauliflower should have a close head (see Fig. 387), and be free from caterpillars. To attain these points, rich soil, and frequent hand-picking—should caterpillars put in an appearance—are requisite. Deeply-worked soil is also necessary; in fact, with no other crop of the *Brassica* tribe is this more important than with the Cauliflower.

Cultivation. Cauliflowers may be divided into two sections: Spring-sown and Autumn-sown. The latter is, perhaps, the more important, as the crop comes from them in spring and early summer, when they are sure to be expected and are always appreciated.

Sow seeds for succession in February and March, on a gentle hotbed, and afterwards in the open ground. As soon as the plants are large enough to handle, prick them out in a warm place under hand lights, or in a frame, with a little bottom heat in the case of the earlier sowings, until of sufficient size to plant out finally. It is not advisable to sow later than May for autumn supplies, as the season is not of sufficient length afterwards for the crop to be ready for use before frost comes. The results are not always certain, especially in a dry summer, a large percentage of the plants being liable to "button," or produce their heads prematurely. If, however, smaller successional plantings are made, the loss of, maybe, the majority of any one will not be so much felt. The plants

Cauliflower—*continued.*

will require a distance of 2ft. each way, and they should be kept watered, if possible, in dry weather. The earlier batches should be planted where there is shelter, such as single lines between Asparagus beds, or between rows of early Peas, if the latter are wide enough apart to admit plenty of light.

To obtain plants to stand the winter, sow in August, or early in September, and, as soon as they are large enough,

FIG. 387. CAULIFLOWER.

prick out about 4in. apart, in cold frames, keeping them about 6in. from the glass. Allow the plants all the air possible, but not too much rain, or they will become sappy, and not able to stand the cold of winter. At the approach of frost, put on the sashes, and, in severe weather, apply coverings of dry litter, fern, or some other non-conducting material. Hand lights, protected in a similar way, may also be used to preserve the plants through the winter. Give plenty of air at all times when there is no frost; and on mild, dry days, throw off the lights altogether, the object being to make the plants as hardy as possible. In March or April, transplant to a warm south border, taking the state of the weather into consideration. It will still be necessary to protect with hand lights, if possible, or by some other means. A good plan is to place at distances four plants within the area of a hand light, and remove the latter on all favourable occasions. Keep the soil stirred around the plants, and, as the season advances, plenty of water and an occasional dose of liquid manure will be of great advantage. Should the crop come in too rapidly, cut the heads so soon as they are ready, and place them on the floor of a cool shed or cellar, where they will keep for several days. Cauliflowers should be cut before the white heads are exposed to the sun and light, or they will quickly open and become partially green, thereby injuring the quality.

Sorts. Distinct sorts are somewhat limited, but their synonyms are numerous. The best for autumn sowing are Early Erfurt, Early London, and Walcheren. These may also be sown in spring; other good varieties for sowing at this season are Large Asiatic, Lenormand's, Dwarf Mammouth, and Veitch's Autumn Giant.

CAULINE. Of, or belonging to, the stem.

CAULOPHYLLUM (from *kaulon*, a stem, and *phyllon*, a leaf; the stem seeming to form a stalk for the single, large, and compound leaf). ORD. *Berberideæ*. A distinct and interesting hardy tuberous perennial. It grows readily

Caulophyllum—*continued.*

in any ordinary light sandy soil. Propagated by divisions of the roots, made in early spring, or after flowering.

C. thalictroides (Thalictrum-like). *fl.* yellow, disposed in a loose raceme. April. *l.*, stem leaf solitary; petiole divided to the base into three parts, each part bearing three ovate or obovate, deeply-cut, acuminated leaflets. *fr.*, berry deep blue, globose, contracted below into a long-stipitate base. *h.* 1ft. North America, 1755.

CAVENDISHIA. *See* **Proclesia.**

CEANOTHUS (from *keanothus*, a name employed by Theophrastus to designate a spiny plant, derived from *keo*, to cleave; however, the modern genus has nothing to do with the plant of Theophrastus). ORD. *Rhamneæ*. Hardy or half-hardy, smooth or pubescent shrubs. Flowers blue or white, very slender, disposed in terminal panicles or in thyrsoid cymes. Leaves alternate, serrated, three-nerved. Branches erect. They thrive in almost any soil, but prefer a light one, and a well-drained situation. The majority of the species are very elegant, and are particularly suited for covering walls with almost all aspects. They are mostly of free and neat growth. Propagation is effected either by cuttings, which should be inserted in sandy soil, in a cold frame, in autumn, or by layers, which is the readiest way of obtaining strong plants. A great number of species have been introduced, from time to time, but only a comparative few are generally grown, although all are well worth cultivating.

C. americanus (American).* New Jersey Tea. *fl.* white, small; thyrse elongated, axillary, with a pubescent rachis. June, July. *l.* ovate, acuminated, serrated, and pubescent beneath. North America, 1713. Hardy. (B. M. 1479.)

C. azureus (azure-blue).* *fl.* pale blue; pedicels smooth; thyrse elongated, axillary, with a downy rachis. April and May. *l.* ovate-oblong, obtuse, acutely serrated, smooth above, hoary and downy beneath. *h.* 10ft. Mexico, 1818. Hardy in most places. SYNS. *C. bicolor* and *C. cæruleus* (L. B. C. 110). (B. R. 291.) There is a very fine variety of this species, GLOIRE DE VERSAILLES, which is most desirable.

C. bicolor (two-coloured). A synonym of *C. azureus.*

C. cæruleus (blue). A synonym of *C. azureus.*

C. collinus (hill). *fl.* white, numerous. June, July. *l.* ovate or elliptic, somewhat clammy. *h.* 1ft. North America, 1827. Hardy.

C. cuneatus (wedge-shaped).* *fl.* pale blue, sometimes white, disposed in corymbose terminal heads. April. *l.* cuneate-obovate, or oblong, usually entire. *h.* 4ft. Upper California. SYN. *C. verrucosus.* Half-hardy. (B. M. 4660.)

C. dentatus (toothed).* *fl.* blue, in small roundish clusters, on naked peduncles about 1in. long. May and June. *l.* fascicled, obovate or oblong-elliptic, acute, the margins strongly undulate or revolute. *h.* 4ft. to 6ft. California, 1848. An erect, and usually nearly glabrous shrub. Hardy. SYN. *C. Lobbianus.* (B. M. 4810.)

C. divaricatus (straggling). *fl.* nearly white, or very pale blue, usually in nearly simple elongated racemes. June, July. *l.* oblong, or oblong-ovate, rounded at the base, obtuse or acute at the apex, both sides smooth. Branches spinose and straggling. *h.* 3ft. to 4ft. California and Oregon, 1848. Hardy.

C. floribundus (many-flowered).* *fl.* richest brilliant mazarine blue, densely crowded in globe-shaped heads. June. *l.* small, oblong, acute, serrulate, evergreen, shining. California. Hardy. (B. M. 4806.)

C. integerrimus (entire-leaved).* *fl.* usually white, arranged in large open panicles, terminating slender branches, or axillary upon shorter peduncles. June, July. *l.* ovate, or ovate-oblong, entire or rarely slightly glandular-serrulate. Branches slender, quite glabrous. *h.* 3ft. to 6ft. California, 1846. Half-hardy.

C. Lobbianus (Lobb's). A synonym of *C. dentatus.*

C. microphyllus (small-leaved). *fl.* white; corymbs stalked, loose, terminal. May, June. *l.* oblong, obtuse, entire, minute, sub-fascicled, smooth. Branches straight, somewhat decumbent. *h.* 2ft. North America, 1806. Hardy.

C. papillosus (pimpled). *fl.* blue, in dense clusters, on short racemes, terminating slender, naked peduncles. June. *l.* narrowly oblong, blunt at both ends, glandular-serrulate, and the upper surface is also glandular. *h.* 2ft. to 3ft. California, 1848. Half-hardy. (B. M. 4815.)

C. rigidus (rigid).* *fl.* rich purple-blue, in long terminal spikes. *l.* broadly cuneate, or obovate, often emarginate, slightly toothed. *h.* 5ft. to 6ft. California, 1848. Half-hardy. (B. M. 4664.)

C. Veitchianus (Veitch's).* *fl.* bright blue, disposed in dense clusters. *l.* thick, small, oblong-obovate, or oval, glandular-serrulate. California. Hardy. (B. M. 5127.)

C. verrucosus (warted). Synonymous with *C. cuneatus.*

CECROPIA (a classical name commemorating Cecrops, the first founder of Athens, which was primarily known as Cecropia). Snake Wood. ORD. *Urticaceæ.* Ornamental stove evergreen, soft-wooded, milky trees. They require a mixture of peat and loam, in a rough state, with the addition of a little sand. Propagated by cuttings, made of ripened shoots, in April, and inserted in sandy peat, with a bell glass over them, in a moist bottom heat.

C. peltata (peltate-leaved). *fl.*, male: receptacles numerous, shortly stipitate, in cylindrical spikes; calyx a turbinate, four-cornered scale. Female: receptacles less numerous and thinner than the male ones, sessile. *l.* large, peltate, seven to nine-lobed, hispid and rough above, white and downy beneath; lobes oblong, bluntish. *h.* 30ft. Jamaica, 1778. The fruits—four, five, or more—rise from the very top of a common peduncle, and shoot into so many oblong, cylindrical berries, composed of a row of little acini, something like the Raspberry, which they also resemble in flavour.

CEDAR, BARBADOS OR BERMUDAS. A common name for **Juniperus bermudiana** (which *see*).

CEDAR OF LEBANON. *See* **Cedrus Libani.**

CEDRELA (a diminutive from *Cedrus*, the Cedar; the wood having an aromatic scent like that of the Cedar-tree). Bastard Cedar. ORD. *Meliaceæ.* A genus of about a dozen species of large stove or greenhouse trees. Flowers whitish, small, in axillary and terminal panicles. Leaves abruptly pinnate, many-paired. They thrive well in rich loam. Large ripened cuttings will strike root in sand, under a hand glass, in heat.

C. odorata (sweet-scented). *fl.* whitish, flesh-coloured, resembling those of a Hyacinth. Summer. *l.*, leaflets ovate-lanceolate, entire, on short stalks. *fr.* about the size of a partridge's egg. *h.* 50ft. Caribbee Islands, 1739. Stove. The bark, berries, and leaves of some of the kinds smell like *Assa-fœtida*, when fresh.

C. sinensis (Chinese). China. Hardy. SYN. *Ailantus flavescens.* (R. H. 1875, 87.)

C. Toona (Toona). *fl.* white or pink, small, smelling like fresh honey. February to May. *l.*, leaflets lanceolate, acuminated, entire, pale glaucous beneath, deciduous. *h.* 60ft. India, 1823. Stove.

C. velutina (velvety). *fl.* whitish. *l.*, leaflets ovate-lanceolate, entire, smooth; petioles and branches velvety, from very short down. *h.* 30ft. India, 1793. Stove.

CEDRELEÆ. Formerly regarded as a distinct order: now included as a tribe of the natural order *Meliaceæ.* Flowers in panicles; petals four or five. Fruit a capsule opening by valves, which separate from a thick axis. Leaves alternate, pinnate, exstipulate. The genus best known is *Cedrela*; others are *Chloroxylon* and *Flindersia.*

CEDRONELLA (probably a diminutive of *kedros*, the Cedar; from the sweet odour of *C. triphylla*). ORD. *Labiatæ.* Half-hardy or hardy herbaceous plants. Whorls approximate into terminal spikes or racemes. Floral leaves bract-formed; bracts small, setaceous; corolla with an exserted tube, naked inside, a dilated throat, and a bilabiate limb. They thrive in a compost of sandy loam, leaf soil, and a little peat. The herbaceous species are propagated by division of the root, or by cuttings of young wood; *C. triphylla* by cuttings.

C. cana (hoary). *fl.* showy purple or crimson, disposed in numerous spikes. July. *l.* ovate-oblong, dentated, fragrant. *h.* 2ft. to 3ft. New Mexico, 1851. A very neat erect, hardy, evergreen species. (B. M. 4618.)

C. cordata (heart-shaped).* *fl.* light purple, in bracteate spikes; corolla twice as long as the calyx segments. May and June. *l.* ovate, cordate at the base, crenated, nearly sessile; shoots trailing. *h.* 4in. to 6in. Northern United States, 1880. Hardy. SYN. *Dracocephalum cordatum.*

C. mexicana (Mexican). *fl.*, corolla purplish, three times as long as the calyx; whorls many-flowered, approximating into a terete, interrupted spike or raceme. *l.* ovate-lanceolate, cordate at the base, toothed. *h.* 2ft. to 3ft. Half-hardy. Mexico, 1832. SYN. *Gardoquia betonicoides.* (B. M. 3860.)

C. triphylla (three-leaved).* Balm of Gilead. *fl.* white or pale purple, about twice as long as the calyx; whorls loose, collected into terete oblong spikes. July. *l.* ternate; leaflets oblong-lanceolate; emitting a very sweet odour when gently rubbed. *h.* 3ft. to 4ft. Canary Islands, 1697. Half-hardy shrub. SYN. *Dracocephalum canariense.*

CEDRUS (from Latin *cedrus*, Greek *kedros*, a name for a coniferous tree from the time of Homer). Cedar. ORD.

Cedrus—*continued.*

Coniferæ. Majestic evergreen trees, with large spreading branches, rigid, scattered and clustered leaves and erect oblong or oval cones rounded at the top; scales of the cones broad, thin, coriaceous, entire, closely appressed, at length deciduous. It is commonly supposed that a rich soil is needed for the Cedar, but this is only correct in a certain degree; a rich loam or sandy clay being, perhaps, the best. An open sub-soil is the most indispensable condition, as will be proved from their healthy state in natural mountainous regions. The Cedar does not like pruning, either in root or branch, and if the top is removed, the tree assumes the form of an enormous bush, of picturesque and grand proportions. Growing in its natural state, it takes a broad, conical form, till it reaches its full height, when the lateral branches begin to extend outwards, and the top then assumes a broad, flat surface. Cones seldom make their appearance on the Cedar of Lebanon before it attains forty years of age, and it has been known not to produce them before the tree was 100 years old. The catkins appear in autumn, and the cones require two years to arrive at maturity. The seeds are difficult to extract from the cones, which do not drop from the tree, but will hang for many years; nor does the influence of the sun cause them to shed the seeds. The cones have, therefore, to be gathered by April, and the seed immediately sown in pans. The seedlings must be planted out in the open nursery the following spring. The Cedar resembles other Coniferæ in the formation of its roots, which strike out a great distance, if not transplanted, and thus lose the advantage which is derived from a bushy root. It is of somewhat slow growth, but is often slower than is necessary, from defective management and an unsuitable situation. Several authorities are agreed in regarding the three species as mere varieties of one. In any case, from a garden standpoint, they possess quite sufficient characteristics to justify separate specific descriptions.

C. atlantica (Atlantic).* Very closely allied to *C. Libani*, but mainly differing in the foliage, which, in the present species, is shorter, usually less than 1in. long, and of a glaucous green or silvery hue. It is also of more erect pyramidal habit than the Cedar of Lebanon. *h.* 80ft. to 120ft. Atlas Mountains of Algeria, 1843.

C. Deodara.* Deodar or Indian Cedar. *l.* fascicled, acute, triquetrous, rigid, larger than those of *C. Libani*, and of a bluish but dark green, covered with a light glaucous bloom. One of the most beautiful members of Coniferæ, and having an elongated pyramidal or conical outline. Leading shoot and branchlets pendulous. *h.* 150ft. to 200ft. Western Himalayas, 1822. The best-known varieties are the following: *C. D. robusta* (sturdy) has coarser and larger leaves and thicker branches, and

FIG. 388. CEDAR OF LEBANON AND OTHER TREES FOR DRY SITUATIONS.

FIG. 389. BRANCHLET, SHOWING LEAVES AND CONE OF CEDRUS LIBANI.

Cedrus—*continued.*

C. D. viridis (green) or *tenuifolia* (thin-leaved) is of slender habit, with bright green foliage. Other forms mentioned in nurserymen's catalogues are: *argentea*, *albo-spica*, *erecta*, and *verticillata glauca*.

C. Libani.* Cedar of Lebanon. *l.* tufted, short, rigid, dark green. Cones oblong, oval, pedunculate, purplish, but ultimately brown, 3in. to 4in. long; scales with a somewhat membranous margin. Branches horizontal, rigid, tubuliform, disposed in distinct whorls; branchlets flat, fan-like, very numerous and thickly set. *h.* 60ft. to 80ft. Lebanon and Taurus in Syria, 1683. This magnificent tree has well been called "The Patriarch of the Tribe." See Figs. 388 and 389. There is a form called *argentea* (silvery) which has highly glaucous foliage, and also a diminutive form, known as *nana*.

C. L. brevifolia (short-leaved). The Cypress Cedar. This distinct variety differs principally from the type in its much shorter leaves.

CELANDINE. *See* **Chelidonium.**

CELASTRINEÆ. An order of shrubs or small trees. Flowers in axillary cymes, small, green, white, or purple; sepals and petals four to five, imbricate. Fruit two to five-celled, capsular or drupaceous. Leaves alternate, rarely opposite, simple, stipulate. Well-known genera are: *Celastrus*, *Elæodendron*, and *Euonymus*.

CELASTRUS (from *Kelastros*, the old Greek name given by Theophrastus to the Privet). Staff-tree. ORD. *Celastrineæ*. Ornamental, hardy, greenhouse or stove, mostly evergreen shrubs. Flowers green or white, small, disposed in terminal racemes or panicles. Leaves alternate, entire, or serrated with minute prickles. The stove and greenhouse species thrive well in a mixture of loam, peat, and sand; and ripened cuttings will root freely in the same sort of compost if a hand glass is placed over them; those requiring stove temperature, should be placed in heat. The hardy species are well adapted for small shrubberies; they thrive in any common soil, and are easily increased by layering the young shoots in autumn. *C. scandens* is an excellent plant for covering bowers or trellis-work.

C. cassinoides (Cassine-like). *fl.* white; pedicels two or three together, axillary, very short. August. *l.* ovate, acute at both ends, serrated, permanent. Plant erect, smooth. *h.* 4ft. Canary Islands, 1779. Greenhouse.

C. edulis (edible). Synonymous with *Catha edulis*.

C. lucidus (shining).* *fl.* white; pedicels axillary, crowded, very short. April to September. *fr.* three-valved, naked. *l.* oval or roundish, shining, marginated. *h.* 1ft. to 3ft. Cape of Good Hope, 1722. Plant erect, smooth, evergreen. Greenhouse. SYN. *Cassine concava*.

C. scandens (climbing).* *fl.* pale yellow; racemes terminal. May, June. *l.* oval, acuminated, serrated, 3in. long, 2in. broad. Berries orange-coloured, three-cornered, three-seeded. North America, 1736. Plant hardy, deciduous, smooth, climbing.

CELERIAC, or TURNIP-ROOTED CELERY (*Apium graveolens rapaceum*). Biennial. A Turnip-rooted variety of the garden Celery. It is very useful for soups and similar purposes, is easy of cultivation, and tolerably certain as to producing a crop. The seed may be sown in the same way, and at the same time, as the ordinary Celery.

Cultivation. As soon as the seedlings are large enough, prick them off, about 3in. apart, in boxes or on a spent hotbed, and keep them there until they are of a good size, when they should be planted out about 1ft. apart in the open ground. They should have air to prevent them "drawing," and be gradually hardened off before planting. The soil can scarcely be too rich, and must be given plenty of water during the summer. Unlike the ordinary Celery, this variety (see Fig. 390) does not require trenches, as the tops are seldom used. All lateral shoots and side roots should be removed from the tubers during the summer, if good large specimens are desired. Occasional hoeings and plenty of water will be the most that is necessary in after cultivation. The roots will be ready for use in autumn, and may be stored in a shed, or lifted from the ground when required for use. A little protection will be necessary if the latter plan is adopted. This crop materially helps the ordinary Celery, both for flavouring purposes and for separate dishes.

FIG. 390. CELERIAC, OR TURNIP-ROOTED CELERY.

CELERY (*Apium graveolens*). Hardy biennial, a native of Britain. Found in a wild state growing in wet ditches and marshy situations. This important

FIG. 391. CELERY.

and extremely popular vegetable (see Fig. 391) requires, and well repays for, special attention in its cultivation. One of the most open and best positions in the garden should be selected for this crop, and the best farmyard manure that can be obtained should be dug into the

Celery—*continued.*

trenches before planting. Another condition absolutely necessary is a plentiful supply of water throughout the growing period, withholding it as soon as the earthing up is completed. If this is neglected, the plants are more liable to "bolt," or prematurely run to seed. Medium-sized heads are generally much more solid than very large ones; consequently, they should be preferred, the latter being often hollow-stalked and useless for any purpose. Celery, when sent to table, should be quite solid and crisp, well blanched, and of a sweet, nutty flavour. A great deal depends on the earthing up and cultivation as well as the variety grown. The soil is best to be rather light, and, if possible, free from large lumps, as it can then be worked much easier round the stems without displacing them, and will at the same time exclude light better, and so hasten the blanching.

Cultivation. At the beginning of March, sow a small quantity of seed for an early supply, and at the end of April, make the main sowings, placing the seed thinly in boxes of light soil. Water carefully, and place the boxes on a mild hotbed, or in a vinery or other warm glass house. The seeds take a rather long time to germinate. A little air must be admitted so soon as the seedlings are up, to keep them dwarf, and water must be carefully applied. So soon as the plants are large enough to handle, prick out, about 4in. apart, in other boxes, or into a frame where there is a little dung heat. Keep well watered, and gradually harden off before planting out. The early batch should be out by the end of May, and the main crop in June, planting all in properly prepared trenches, supposing this system is adopted.

There are various ways of growing Celery, some planting in trenches, in single or double lines, and others growing it in beds. The single line in trenches allows the plants plenty of light, and it is much easier and better to earth them up; consequently, this plan has much to recommend it. In the case of some of the small-growing varieties, or where space is limited, one of the other plans might be preferred: but care must be taken to keep the stems quite straight when earthing up. For single line, mark out trenches 4ft. to 5ft. from centre to centre, digging them about 15in. wide and from 9in. to 1ft. deep, and place the soil in the intervening spaces, which may be utilised for some other vegetable that does not require a long season of growth, such as lettuces, early cauliflowers, &c. The crop from these would be cleared off before the soil would be required for the Celery. In the bottom of the trenches, place a thick layer of rotten manure, and lightly dig it in Apply a heavy drenching of water, and a day or two afterwards put in the plants, about 1ft. asunder, along the centres of the trenches, again well watering in. Be careful that each plant has a good ball of earth adhering to the roots when taken up, and plant with a trowel.

The after cultivation consists primarily in supplying plenty of water in all but showery weather, and in keeping clear from weeds. When the plants are 1ft. high, fill in sufficient soil to cover any roots that may be on the surface, after which no more earthing will be needed till August or the beginning of September, excepting in the case of the earliest crops, which will have been more forward at all stages. Remove all lateral shoots from the base, and earth up when the foliage is dry, keeping the soil each time below the middle leaves or crown of the plant. The best plan is to have a boy holding the stems and leaves together, while someone with a spade places the soil around the plants, or a piece of matting may be tied round each plant and removed when the work is finished. Earthing should be completed in about three stages, proceeding by the same method each time. When frost sets in, cover the ridges with about 6in. of dry litter, or something of a similar description, and a good plan is to lay a couple of 9in. boards, nailed at right angles, over the litter, to keep out

Celery—*continued.*

rain and snow water. Should Celery be taken up when frozen, a condition that should be avoided if possible, it must be submerged in very cold water, to thaw it; but the frozen parts will often be quite useless.

Sorts. These are somewhat numerous, but many are coarse and deficient in flavour. Sandringham White is one of the best varieties for early work, but the red Celeries are generally considered superior, so soon as they can be obtained. Major Clarke's Solid Red and Williams' Matchless Red are two of the best for main crop, and to stand the winter. Other good varieties are Manchester Red, a strong growing and good variety to stand the winter; Sulham Prize Pink, and Leicester Red. The best white varieties, in addition to Sandringham, are Veitch's Solid White, Williams' Matchless White, and Grove White. For the Turnip-rooted Celery, *see* **Celeriac.**

CELERY FLY (*Tephritis onopordinis*). Celery Leaf-miner. Of late years, the larvæ of this destructive insect have proved a great drawback to the culture of Celery. They sometimes appear when the plants are quite small, and eat out all the inner portion of the leaves as fast as they are produced, thereby preventing the plants from growing, and causing them to turn brown and often eventually to die away. Syringing the plants with tobacco water, followed by clean water, is said to destroy them; but the best and only certain remedy is to carefully look over every plant so soon as the small larvæ are detected, pinch off the affected part of the leaves, and burn them, or destroy the insects between the finger and thumb. If this method be followed from the first, at the same time keeping the plants growing as much as possible by applying plenty of water, the insects will not be able to cause so much injury. They attack the Celery for three or four months in some seasons, and their destruction should be taken in hand immediately they are detected.

CELERY LEAF-MINER. *See* **Celery Fly.**

CELOSIA (from *kelos*, burnt; in reference to the burnt-like appearance of the flowers of some species). Cockscomb. ORD. *Amarantaceæ*. Erect, glabrous or pilose herbs. Flowers white or coloured, shining, hermaphrodite, bracteate and bracteolate, crowded in spikes or panicles; perianth five-parted; the segments equal, spreading, glabrous. Leaves alternate, petioled. We give cultural directions of *C. cristata* (Cockscomb), and under the same treatment the other varieties will thrive admirably, except that they must never be kept dry, and must be encouraged by shifting as often as necessary. It is useless to attempt growing this with any success without heat. A good specimen plant should be not more than 9in. high, and quite as wide over the top of the flower-head, which should also be as thick as possible, and of a dense colour. Seeds must be sown in March or April, in pans of well-drained, rich, sandy soil. After sowing, the pans should be placed in a hotbed, with a night temperature of 65deg., rising to about 70deg. with sun heat, and a moist, but not stagnant, atmosphere should be maintained. As soon as the seeds germinate, they should have plenty of light, and a little air; and care must be taken that the soil does not become dry. The pans must be kept near the glass. When the plants are large enough to handle, they should be potted off into small 60-sized pots, the cotyledons or seed leaves being kept close to the soil. The pots must be placed in a position close to the glass, in a frame where the same conditions are maintained as above mentioned, allowing a rise of 5deg. or 6deg. in the daytime. They should be grown as quickly as possible, and be kept rather dry, to induce flowering. As soon as the heads show, so that the best-formed ones can be selected, they should be shifted into 5in. pots, giving a good soaking before repotting. They must again be placed close to the glass, and the pots plunged to their rims in ashes or cocoa-nut fibre refuse, on a hotbed. Water must be sparingly administered, and more air admitted. If

Celosia—*continued.*

large heads are required, another shift may be given before they are too large, and 7in. pots should be used for this final potting. When these are filled with roots, liquid manure may be given about twice weekly. Moderately firm potting is necessary. The best soil to grow Celosias in is half-rich sandy loam, and half-rotten cow and stable manure mixed, with a good dash of silver sand. There are several excellent sorts, among which may be named Tom Thumb and Sutton's Prize Dwarf.

The other species differ from *C. cristata* in having large plumes of inflorescence, which form pyramidal masses of colour. Many sorts have a graceful pendent habit, which renders them objects of great beauty, when well grown. This is easily accomplished if treated in the same way as recommended for the Cockscombs. Frequent syringings are needed to keep down thrips and red spider.

FIG. 392. CELOSIA ARGENTEA, showing Entire Plant and Detached Inflorescence.

C. argentea (silvery).* *fl.* white; inflorescence dense, spicate. *l.* narrow, very shortly stalked or sessile. Tropical Asia. See Fig. 392.

C. a. linearis (linear) only differs from the typical *C. argentea* in its narrower linear leaves. India, &c.

C. cernua (drooping). A synonym of *C. cristata comosa*.

FIG. 393. FLOWER OF CELOSIA CRISTATA.

Celosia—*continued.*

C. cristata (crested).* Common Cockscomb. *fl.* dark red; spike oblong, compressed; common peduncle striated. *l.* ovate, acuminate; stipules falcate. Asia, 1570. See Fig. 393.

C. c. coccinea (scarlet) differs from the common Cockscomb in the crowded pyramidal arrangement of the inflorescence, narrower leaves, and short stamens. It will grow well in a lower temperature than required for the type. (B. R. 1834.)

C. c. comosa (hairy). *fl.* scarlet or purplish; spikes arranged in a pyramidal drooping panicle. *l.* stalked, ovate. *h.* 1ft. to 2ft. India, &c., 1810. SYN. *C. cernua.* (A. B. R. 10, 635.)

FIG 394. CELOSIA CRISTATA VARIEGATA.

C. c. variegata (variegated) differs from *C. cristata* (the wild type, from which the Garden Cockscomb has been developed) only in its variegated leaves. See Fig. 394.

FIG. 395. CELOSIA HUTTONII.

C. Huttonii (Hutton's).* *fl.* red, in ovate spikes. *l.* crimson or claret-coloured. *h.* 1ft. to 2ft. Java, 1871. A very fine-foliaged stove plant, of bushy, pyramidal habit. See Fig. 395.

C. pyramidalis (pyramidal).* *fl.*, colours various; and instead of

Celosia—*continued.*

forming a crested mass, as in *C. cristata*, they assume a more normal form in elegant plants. *h.* 1½ft. India, 1820. There are a great number of varieties of this species, all of which are very ornamental, and, in a small state, are suitable for table decoration.

CELSIA (named after Olaus Celsius, 1670-1756, professor in the university of Upsal, author of "Hierobotanicon," a work on biblical botany). ORD. *Scrophularineæ*. Hardy or half-hardy herbs. Flowers disposed in loose, terminal racemes or spikes. Leaves crenate, sinuate, dentate, or pinnatifid. This genus differs from *Verbascum* merely in having four didynamous stamens. The seed may be sown in the open borders, in June, and thinned out for flowering, or raised in nursery beds and transplanted. *C. Arcturus* should be increased by cuttings, young wood striking freely in a cool house or frame.

C. Arcturus (Arcturus).* *fl.* yellow, large; filaments bearded with purple hairs. July to September. *l.*, radical ones lyrate; superior ones oblong. *h.* 4ft. Candia, 1780. Half-hardy shrubby species. This is a pretty plant for pot culture in a cool house. (B. M. 1962.)

C. betonicæfolia (Betony-leaved). *fl.* yellow, the two superior segments marked each by a purple spot. July. *l.* ovate-oblong, wrinkled, crenated. Plant hairy. *h.* 2ft. Algeria, 1824. Half-hardy biennial. (B. M. 6066.)

C. bugulifolia (bugle-leaved).* *fl.* yellowish, with curious brown markings. *l.* stalked, ovate, crenate. *h.* 1ft. South-east Europe, 1877. Hardy. SYN. *Ianthe bugulifolia*.

C. cretica (Cretan).* *fl.* yellow, marked with two rust-coloured spots at the bottom on the upper side; 1½in. in diameter; nearly sessile. June. *l.* hairy, lyrate-oblong; upper ones oblong. *h.* 4ft. to 6ft. Crete, 1752. Hardy biennial. (B. M. 964.)

C. orientalis (oriental). *fl.* yellow, shorter than the bracts. June, July. *l.* lower ones jagged; cauline ones bipinnate; segments narrow. *h.* 2ft. Levant, 1713. Hardy annual. (S. F. G. 605.)

CELTIS (name used by Pliny for the Lotus). Nettle-tree. ORD. *Urticaceæ*. A genus of rather large, hardy, deciduous trees or shrubs, with greenish fascicled or racemose flowers, small one-seeded drupaceous fruit, and strongly-nerved, simple, alternate leaves. They thrive in ordinary soil, and are very suitable for the back of a shrubbery. Increased by seeds, which should be sown as soon as ripe; by layers; and by cuttings of ripened shoots, in autumn. The stove species are not worth growing.

C. australis (Southern). *fl.* greenish, solitary. May. *l.* ovate-lanceolate, oblong-lanceolate, or acuminate, argutely serrated, unequal at the base; upper surface rough, under one downy. *h.* 30ft. to 40ft. South Europe, 1796. (W. D. B. 105.)

C. cordata (cordate). Synonymous with *C. crassifolia*.

C. crassifolia (thick-leaved).* American Hackberry. *fl.* greenish; peduncle slender, one or two-flowered. May. *l.* rather leathery, cordate, auricled, and unequal at the base, 6in. long, 3in. to 4in. broad, serrated, rough on both surfaces. *h.* 20ft. to 30ft. North America, 1812. SYN. *C. cordata*.

C. Davidiana (Rev. Father David's). *l.* elliptic, narrowed to both ends, irregularly toothed, thick, coriaceous, glabrous, deep glaucous-green above, light green beneath. China, 1864. A much-branched tree, with pendulous twigs.

C. occidentalis (Western).* North American Nettle-tree. *fl.* greenish, small. May. *l.* reticulated, ovate-acuminate, unequal at the base, serrate, rough on the upper surface, hairy on the under one. *h.* 30ft. to 50ft. Canada, 1656. (W. D. B. 147.)

C. o. pumila (dwarf). A dwarf form, seldom exceeding 8ft. in height, with more membranous (at length) glabrous leaves.

C. Tournefortii (Tournefort's). *fl.* greenish. *l.*, when adult, ovate, acute, unequal at base, crenately serrated, roughish on the upper surface; when young, subcordate at the base. *h.* 10ft. to 12ft. Armenia, 1738.

CENTAUREA (from *Kentaurion*, the name given by Dioscorides to the Centaury, *Erythræa Centaurium*, which was said to have cured a wound in the foot of the centaur Chiron, caused by the arrow of Hercules). Centaury. ORD. *Compositæ*. Pappus short and bristly, rarely none; involucre globose or oblong; bracts imbricated, scarious, fringed, toothed, or spinous: receptacle bristly; florets all tubular, the outer ones sometimes large and neuter. Of this genus, about four hundred species (annuals, biennials, and perennials) have been described; comparatively few, however, are worth growing, but these are of the easiest culture in ordinary soil. Seeds of the annual kinds may be sown in the open border, in April, and the plants subsequently thinned out to three or four in a patch, where they are to

Centaurea—*continued.*

remain and bloom. The biennials may be sown in March, in a slight heat, and planted out in May. The herbaceous perennials require merely ordinary care and attention, and common garden soil, wherein to thrive well. *C. ragusina* and *C. Cineraria* are very extensively cultivated, and as failures are occasionally experienced in their propagation, the following plan, practised by a successful grower, is recommended: First, make the cuttings, about the beginning of September, take off the bottom leaves, and allow only about 1in. of wood to remain. Insert them in 60-sized pots, in a compost of loam, leaf mould, and sharp sand, in equal proportions; plunge in a cold frame, and keep them close for about four weeks, by which time they will be rooted. Great care must be taken in watering. When they become pot-bound, shift into 48-sized pots, in which they may remain until bedding-out time. Seeds may also be easily procured and raised. They should be sown in August, in slight heat; and when the seedlings are large enough to handle, they should be potted off singly into small thimble pots, in which they may be kept through the winter, in a cold frame or cool house, a shift being given in the spring. Much stronger plants are thus obtained than if the seed is sown in the early part of the year.

FIG. 396. FLOWERING BRANCH OF CENTAUREA AMERICANA.

C. alpina (alpine).* *fl.-heads* yellow; involucral scales egg-shaped, obtuse. July. *l.* decurrent, spinous, downy beneath. *h.* 3ft. Southern and Eastern Europe, 1640. Hardy herbaceous.

C. americana (American). *fl.-heads* red; outer scales of involucre three times as short as their appendages; peduncles ventricose at top. August. *l.* oblong, membranous, entire. *h.* 3ft. North America, 1824. Hardy annual. See Fig. 396.

C. atropurpurea (dark purple).* *fl.-heads* dark purple; involucral scales ovate-lanceolate, serrate, ciliated. June to August. *l.* bipinnatifid; segments lanceolate. *h.* 3ft. Eastern Europe, &c., 1802. Hardy perennial.

C. aurea (golden).* *fl.-heads* golden-yellow; involucre simply spinous; spines spreading; florets equal. July to September. *l.* hairy; lower ones pinnatifid. *h.* 2ft. South Europe, 1758. Hardy perennial. (B. M. 421.)

C. babylonica (Babylonian).* *fl.-heads* yellow, small, numerously produced close to, and along the stem. July. *l.*, root ones lanceolate-ovate, stalked, with a few small teeth; stem ones narrower, lanceolate, decurrent; large, clothed with a white cottony down, which renders this species peculiarly well adapted for borders and margins of shrubberies. *h.* 6ft. to 10ft. Levant, 1710. Hardy perennial. See Fig. 397.

C. candidissima (whitest). A synonym of *C. Cineraria*.

C. Cineraria (Cineraria). *fl.* purple; involucre ciliated. July and August. *l.* downy, very white, all compound; lowest bipinnatifid; upper ones pinnate-laciniated. *h.* 3ft. Italy, &c., 1710. Half-hardy herbaceous perennial. SYN. *C. candidissima*.

C. Cyanus (dark blue).* Blue-bottle, Bluet, or Cornflower. *fl.-heads*, florets of the disk purple, small; of the ray, bright blue, few, larger, spreading; scales of the involucre greenish, with brown margins. July. *l.* linear, entire; the lower ones often toothed; cottony. *h.* 2ft. to 3ft. Britain. This is one of the showiest of blue-flowered annuals. See Fig. 398. It varies in all shades from white to deep rose.

C. dealbata (whitened).* *fl.-heads* rose-coloured. Summer. *l.* smooth above, and covered with white hairs underneath; radical ones stalked, pinnate, with obovate lobes, coarsely toothed, often auricled at the base; stem ones pinnate, with oblong-lanceolate lobes. *h.* 1ft. to 1½ft. Caucasus, 1804. Hardy herbaceous. See Fig. 399.

C. depressa (depressed). *fl.-heads* blue, with brownish-red centre. Summer. Orient, 1818. *h.* 1ft. This species resembles *C. Cyanus*,

Centaurea—*continued.*

but is a dwarfer grower, and has brighter-coloured flowers. Hardy herbaceous. (B. M. 3662.) *C. stricta* comes very near this, if indeed, anything more than a dwarf variety.

FIG. 397. CENTAUREA BABYLONICA.

C. Fenzlii (Fenzl's).* *fl.-heads* canary-yellow, large, terminal; flower-stems erect, branching from the base. *l.* large, handsome, cordate-ovate, glaucous green, radical. *h.* 4ft. Armenia, 1868. Hardy biennial. (B. M. 6392.)

C. macrocephala (large-headed).* *fl.-heads* yellow, larger than most others; scales of involucre jagged. July. *l.* oblong-lanceolate, shortly decurrent, undivided, rough, somewhat serrated, ending in a short sharp point. Stem simple, hollow, and thickened under the flower. *h.* 3ft. Caucasus, 1805. Hardy perennial. See Fig. 400. (B. M. 1248.)

C. montana (mountain).* *fl.-heads* blue, large, handsome; florets deeply cut into four or five segments. Early summer. *l.* lanceolate, entire, decurrent, cottony. Stem usually simple, sometimes

FIG. 399. CENTAUREA DEALBATA.

Centaurea—*continued.*

sparingly branched. *h.* 2ft. Europe, 1596. Hardy perennial. (B. M. 77.) There are also white-flowered (*alba*) and rose-coloured (*rosea*) varieties, both of which are well worth growing.

FIG. 398. FLOWER AND BUD OF CENTAURRA CYANUS.

C. moschata (musky). Sweet Sultan. *fl.-heads* purple; involucre roundish, smooth; scales egg-shaped. July. *l.* lyrate-toothed. *h.* 2ft. Persia, 1629. Hardy annual.

FIG. 400. CENTAUREA MACROCEPHALA.

Centaurea—*continued.*

C. pulchra (beautiful). *fl.-heads* bright purple, globose; outer scales of involucre drawn out into an ovate, pectinately ciliated, scabrous appendage; middle bristle longer, stiffer and shining. August. *l.* sessile, glabrous, pinnate; lobes linear, acute, entire or a little toothed. Stem branched, furrowed. *h.* 1ft. Cashmere, 1838. Half-hardy. (B. R. 26, 28.)

C. ragusina (Ragusan).* *fl.-heads* yellow; involucre ciliated. June, July. *l.* downy with silvery hairs, pinnatifid; segments obtuse, egg-shaped, quite entire, outer ones largest. *h.* 2ft. Candia, 1710. Half-hardy perennial. (B. M. 494.)

C. ruthenica (Russian). *fl.-heads* pale yellow; involucre scales egg-shaped, obtuse. July. *l.* pinnate, smooth; leaflets cartilaginous, sharply serrate; terminal one oblong, egg-shaped. *h.* 3ft. Orient, 1806. Hardy perennial.

C. suaveolens (sweet-scented).* Yellow Sultan. *fl.-heads* yellow, sweet-scented; involucre round, smooth. July. *l.*, lower ones broad, somewhat spathulate, toothed; upper ones lyrate at base. *h.* 1½ft. Levant, 1683. Hardy annual. (S. B. F. G. i. 51.)

C. uniflora (one-flowered). *fl.-heads* purple, roundish, terminal, nearly sessile among the upper leaves. Summer. *l.* small, white and downy; lower ones oblong-lanceolate, toothed; upper ones lanceolate, entire. *h.* 9in. to 15in. South Europe, 1824. Hardy perennial.

CENTAURY. *See* **Erythræa Centaurium.**

CENTAURY, AMERICAN. A common name for the species of the genus *Sabbatia*.

CENTOTHECA (from *kentein*, to prick, and *theke*, a receptacle; in allusion to the retrorse hairs of the upper florets). ORD. *Gramineæ*. A genus containing two or three species, distributed over tropical Africa and Asia, and the Pacific Islands. It is a somewhat near ally of *Melica*. A compost of well-drained loam and leaf soil is best. Propagated by seeds, sown in spring.

C. lappacea (bur-like). Bur. Inflorescence paniculate; spikelets in branched racemes, many-flowered, green; pedicels hispid. *l.* sessile, lanceolate, acute, glabrous, 5in. to 6in. long, about ¾in. broad. *h.* 2ft. India, Java, &c. Greenhouse.

CENTRADENIA (from *kentron*, a spur, and *aden*, a gland; referring to a spur-like gland on the anthers). SYN. *Plagiophyllum*. ORD. *Melastomaceæ*. Stove evergreens. Flowers pink or white; racemes few-flowered, axillary. Leaves opposite, unequal, ovate or lanceolate, entire, membranous, three-nerved. They thrive in a compost of one part sandy loam, and two parts rough peat. Cuttings of side shoots should be inserted in February. *C. grandifolia* makes an elegant table ornament, and cut sprays of it last in perfection a considerable time.

C. divaricata (severed). *fl.* white, few, terminal. Central America, 1881.

C. grandifolia (large-leaved).* *fl.* pink. November. *h.* 2ft. Mexico, 1836. (B. M. 5228.)

C. rosea (rosy).* *fl.* pink; racemes sub-corymbose, terminal. January. *l.* ovate-lanceolate, unequal-sided. *h.* 1ft. Mexico, 1840. (B. R. 29, 20.)

CENTRANTHUS (from *kentron*, a spur, and *anthos*, a flower; in reference to the corolla being furnished with a spur at the base). ORD. *Valerianeæ*. Ornamental herbaceous plants. Flowers red or white, unilateral along the branches of the panicle, which is corymbose. Leaves undivided or pinnate. All the species are excellent for borders, growing in common garden soil, or on walls or

FIG. 401. CENTRANTHUS MACROSIPHON, showing Habit and Single Flower.

Centranthus—*continued.*

rockwork; and are readily increased by seeds, which, for show annuals, should be sown in March.

C. angustifolius (narrow-leaved). *fl.* red, ½in. long; spur one-half shorter than the tube of the corolla. May to July. *l.* linear-lanceolate, quite entire. *h.* 1ft. to 2ft. South Europe, 1759. Hardy perennial. SYN. *Valeriana angustifolia*. (S. F. G. 29.)

C. Calcitrapa (Caltrops-like). *fl.* white, tinged with red, rather panicled. May to July. *l.*, radical ones ovate, entire, or lyrate; upper ones pinnatifid. *h.* 6in. to 1ft. South Europe, 1683. Hardy annual. SYN. *Valeriana Calcitrapa*. (S. F. G. 30.)

C. macrosiphon (large-tubed).* *fl.* rosy-carmine, rather larger than those of *C. ruber*. July. *l.* glaucous. *h.* 2ft. Spain. An annual, of compact habit. See Fig. 401. (P. F. G. 67.) Of this there is a white-flowered variety.

C. ruber (red).* Red Valerian. *fl.* red; spur one-half shorter than the tube; cymes dense, forming a handsome corymbose panicle. Summer. *l.* ovate or lanceolate; upper ones unequal at the base, toothed a little. *h.* 2ft. to 3ft. Europe (Britain). Perennial. There are several forms, including a white-flowered variety, of this species.

CENTRONIA (from *kentron*, a spur, in allusion to the spurred anthers). ORD. *Melastomaceæ*. A genus of highly ornamental shrubs, from Mexico, New Granada, Guiana, and Peru. There are nine species; in all probability, that described below is the only one now in cultivation. A compost of sandy peat and leaf mould suits them well. Propagated by cuttings of half-ripened shoots, inserted in peat and sand, under a bell glass.

C. hæmantha (blood-coloured). *fl.* deep purplish-red, too much tinged with violet to thoroughly agree with specific name; in panicles, large. *l.* shortly stalked, elliptic-obovate, five-nerved, reddish-brown beneath, deep green above. *h.* 8ft. Ocaña, 1852. Greenhouse. SYN. *Calyptraria hæmantha*.

CENTROPOGON (from *kentron*, a spur, and *pogon*, a beard; in reference to the fringe which envelops the stigma). ORD. *Campanulaceæ*. Ornamental greenhouse or stove herbaceous perennials. The most popular member of this genus is a hybrid between *C. fastuosus* and *Siphocampylos betulæfolius*, and known as *C. Lucyanus*. From its flowering naturally during the dead of the winter, it is a most desirable plant; and it is more particularly this to which the cultural remarks refer. The ready way this plant admits of increase is much in its favour, as amateurs will find no difficulty in propagating it. Any young shoots, about 3in. or 4in. long, form good cuttings, and, if taken off with a heel, root with more certainty, although others rarely fail if placed in sharp sandy soil, close around the edge of the pot, and then kept close under a bell glass or propagating box, in a temperature ranging between 60deg. and 70deg. They delight in a light, loose, rich vegetable soil, such as fibry peat, or leaf mould and loam in equal proportions. Being rather moisture-loving subjects when growing freely, it is necessary to afford them a fair amount of drainage, and to add sufficient sand when potting to keep the soil open and porous. During the early spring months, a cool stove is the best situation for them, but with the advent of summer a pit or frame is the most suitable. Here they should be plunged in a bed of gently fermenting leaves, or other material answering the same purpose, and receive a slight shade for an hour or two during the hottest part of the day. So favoured, and by shutting up immediately after giving a good syringing early in the afternoon, their growth will be rapid and clean. To insure maturation by the winter, it is a good plan to withdraw the lights in the forenoon during the early parts of September, at the end of which month they should be transferred to their winter quarters in an intermediate house or cool stove, till they begin to show bloom, when any warm greenhouse or conservatory will suit them, if the temperature does not recede below 50deg. In either of these places, it is always advisable to keep them as dry at the roots as possible, without allowing them to flag; for these, like many other plants, will endure much more cold when in this state than with the soil wet, in which condition they soon look miserable, and often die outright. Old plants, cut down, shaken out, and repotted, make grand specimens; but for general decorative purposes those struck in spring

Centropogon—*continued.*

are the best, being a nice handy size. Owing to its semi-procumbent habit, it is not only good for pot culture, but likewise forms a capital basket plant for suspending, in which position it shows off its beauties to great advantage. When grown in this way, it is best to allow it to droop naturally over the sides; but in pots it requires support, which may be afforded it by using any small neat sticks, touched over with pale green paint, so as to render them as inconspicuous as possible.

C. cordifolius (heart-shaped-leaved). *fl.* rose. November. *h.* 2ft. Guatemala, 1839. **Stove species.** (F. d. S. 4, 362.)

FIG. 402. FLOWERS OF CENTROPOGON FASTUOSUS.

C. fastuosus (prickly).* *fl.* rose. November. *l.* broadly lanceolate, crenately serrated. *h.* 2ft. Greenhouse species. See Fig. 402.

C. Lucyanus (M. Lucy's).* *fl.* pretty rosy carmine, tubular, freely produced at the ends of short lateral spurs. Winter. *l.* oblong-lanceolate. Stove species. This most desirable garden hybrid was raised by M. Desponds, of Marseilles, in 1856. (R. H. 1868, 291.)

C. surinamensis (Surinam). *fl.* rose. November. *h.* 2ft. Surinam, 1786. Stove species. (P. M. B. 13, 149.)

CENTROSOLENIA (from *kentron*, a sharp point, and *solen*, a tube; referring to the form of the corolla). ORD. *Gesneraceæ*. This is now regarded as a mere section of the genus *Episcia*. Stove herbaceous perennials. Corolla tubular, spurred behind at base; throat widened; limb short, five-lobed, spreading; calyx five-parted, serrated; peduncles solitary, axillary, sometimes bearing many pedicels. Leaves sub-cordate, petiolate. They thrive in a soil composed of equal parts peat, leaf mould, and sand. Good drainage is essential, and scarcely any water is needed in winter. Cuttings will root in sand, in a warm frame, with a bell glass covering.

C. bractescens (bracteate). *fl.* aggregate, bracteate; corolla large, spreading wider upwards; limb white; tube tinged with yellow; calyx a little shorter than the corolla, red-purple above and white below; peduncles short, axillary, many-flowered. June. *l.* nearly equal, large, ovate-acuminate, coarsely and unequally serrated, perfoliate at base. Stem succulent. *h.* 2ft. New Grenada, 1852. (B. M. 4675.)

Centrosolenia—*continued.*

C. bullata (bullate).* *fl.* straw-colour, very freely produced. *l.* with a very rough uneven surface, of a beautiful dark olive-green, with a bronzy shade above, and of a vinous red beneath. East of Peru. SYN. *Episcia tessellata*. (I. H. 607.)

C. glabra (smooth). *fl.*, corolla very broad, tubular, 1½in. long; limb 1in. across; white, with a sulphur-coloured tube. June. *l.* opposite, unequal, the larger one oblique obovate-oblong, serrated, pilose on the ribs beneath, the smaller one lanceolate. *h.* 1ft. La Guayra, 1846. (B. M. 4552.)

C. picta (painted).* *fl.*, corolla nearly white, tubular, about 2in. long, hairy. June. *l.* nearly equal, oval or obovate, velvety painted, serrated, on long petioles. *h.* 1ft. Banks of Amazon, 1845. (B. M. 4611.)

CENTROSTEMMA. *See* **Cyrtoceras** and **Themistoclesia.**

CEPHAELIS (from *kephale*, a head; in reference to the arrangement of the flowers). ORD. *Rubiaceæ*. Stove shrubs, rarely perennial herbs, mostly natives of tropical America, a few African, and two or three from Asia and Oceania. Heads of flowers terminal or axillary, sessile or pedunculate, subtended by an involucre of from two to eight bracts, which are disposed in a cruciately opposite manner; corolla funnel-shaped. Leaves ovate, acute, petiolate; stipules free or combined. They thrive in a compost of sandy, fibry peat, leaf soil, and lumpy loam, with thorough drainage. Cuttings of firm young shoots will root in sandy soil, under a hand glass, in moist stove heat.

C. Ipecacuanha (Ipecacuanha).* *fl.* white, downy outside; heads terminal, pedunculate, erect at first, but at length becoming pendulous. January. *l.* oblong-ovate, scabrous above, and clothed with fine down beneath. Stems ascending at first, but at length becoming erect, rather downy at the apex. *h.* 6in. Brazil, 1839. Stove herbaceous. The root of this plant has long been employed for medicinal purposes. (B. M. 4063.)

C. tomentosa (downy).* *fl.* brownish; heads on long peduncles; bracts of involucre scarlet, large, broad, ovate-cordate. June. Branches, petioles, peduncles, leaves, and involucre, hairy. *h.* 4ft. Tropical America, 1882. Stove shrub. (B. M. 6696.)

Many other species are well worth growing, but are either lost to cultivation or await introduction.

CEPHALANTHERA (from *kephale*, a head, and *anthera*, an anther). ORD. *Orchideæ*. Very interesting and curious terrestrial orchids. Calyx of three ovate, acute, converging, permanent sepals; petals ovate, erect, as long the calyx; lip scarcely spurred, saccate at the base, contracted in the middle, undivided and recurvate at the end. They thrive well in a chalky loam, and may be propagated by divisions. The following are our three native species:

C. ensifolia (sword-leaved). *fl.* pure white; sepals and petals narrower and more pointed than in *C. grandiflora*. May and June. *l.*, lower ones broadly oblong; upper ones long and narrow lanceolate. Stems 1ft. to 2ft., sub-solitary, slender. England. Closely allied to *C. grandiflora*, but with narrower leaves. (Sy. En. B. 1484.)

C. grandiflora (large-flowered).* *fl.* white, distant, sub-erect; sepals and petals ovate-oblong, obtuse; terminal lobe of lip orbicular, erect, yellow. May and June. *l.* ovate-oblong, 3in. to 6in. long; upper ones narrower. Stems tufted, 1ft. to 2ft. high. England. (Sy. En. B. 1485.)

C. rubra (red). *fl.* rose-purple, few or many; sepals and petals acuminate; lip white; terminal lobe ovate-lanceolate. June and July. *l.* lanceolate. Stem 6in. to 18in. high, slender. England. (Sy. En. B. 1483.)

CEPHALANTHUS (from *kephale*, a head, and *anthos*, a flower; the flowers are disposed in globular heads). Button-wood. ORD. *Rubiaceæ*. An ornamental hardy deciduous shrub, growing in common garden soil, but preferring moist sandy peat. The most suitable place for it is the American garden. Propagated best by layers, in the early autumn.

C. occidentalis (Western).* *fl.* whitish-yellow; peduncles much longer than the heads, usually by threes, at the tops of the branches. July. *l.* opposite, or three in a whorl, ovate or oval, acuminated. *h.* 7ft. North America, 1735. (T. S. M. 394.)

CEPHALARIA (from *kephale*, a head; the flowers being disposed in round heads). ORD. *Dipsaceæ*. A genus of hardy annual or perennial herbs, closely allied to *Dipsacus*. Flower-heads terminal, globose; involucre surrounding the heads of many imbricated leaves, shorter than the paleæ. Leaves toothed or pinnatifid. Most of the

Cephalaria—*continued.*

species are too coarse to admit of their being grown in the ordinary borders, but they are very desirable for naturalising in the wild garden, or other similar places. For culture, *see* **Dipsacus.**

C. tartarica (Tartarian). *fl.-heads* yellow, large; paleæ deep green, white inside, ciliated. Summer. *l.* pinnate; leaflets decurrent, oval-lanceolate, serrated. Stems striated, clothed with retrograde villi at the base and on the petioles. *h.* 5ft. to 6ft. Siberia, 1759. Perennial.

Several other names occur in nurserymen's catalogues, but the above-mentioned species is the best.

FIG. 403. CEPHALOTUS FOLLICULARIS, showing Flower-spike and Pitcher-like Leaves.

CEPHALOTAXUS (from *kephale*, a head, and *Taxus*, the Yew; referring to the general appearance of these trees). Cluster-flowered Yew. ORD. *Coniferæ.* A small genus of coniferous plants, with Yew-like foliage. Flowers dioecious, in clusters. Fruit large, plum-like, two or three together. Leaves linear, two-rowed, sharply pointed. Primary branches whorled, spreading. They are hardy, and succeed in almost any soil, but do best in sheltered spots. Propagated by seeds, or by cuttings. The latter should be inserted in August or September, in sandy soil, under handlights, or in a cold frame kept shaded during bright weather.

Cephalotaxus—*continued.*

C. coriacea (coriaceous). A synonym of *C. drupacea.*

C. drupacea (drupaceous).* *l.* yellowish, glossy green above, glaucous beneath, crowded, 1in. to 2in. long, linear, arranged in two opposite rows. *fr.* purple, oval-oblong, about 1in. in length. *h.* 6ft. to 8ft. Japan, 1844. SYNS. *C. coriacea, C. fœminea, Podocarpus coriacea.*

C. filiformis (thread-like). A synonym of *C. Fortunei.*

C. fœminea (female). A synonym of *C. drupacea.*

C. Fortunei (Fortune's).* *l.* dark green above, lighter beneath, 3in. or more long, gradually narrowing to a sharp point, arranged in two rows. Branches long, slender, pendulous. *h.* 6ft. to 8ft. China, 1848. Probably the species best adapted to the English climate. SYNS. *C. filiformis, C. mascula,* and *C. pendula.* (B. M. 4499.) = 4499

C. mascula (male). A synonym of *C. Fortunei.*

C. pedunculata (peduncled).* Lord Harrington's Yew. *l.* bright green above, marked with two broad glaucous lines beneath, 1in. to 2in. long, arranged in two rows. *fr.* large, drupaceous, on long peduncles. *h.* 6ft. to 8ft. Japan, 1837. SYNS. *Taxus Harringtoniana, T. sinensis.* (G. C. n. s., xxi. 113.) The variety *fastigiata* (=*Taxus japonica* and *Podocarpus koraianus*) is very distinct and ornamental, having bunches as erect as the trunk, and the leaves scattered or spirally arranged around them. *C. p. sphæralis* differs principally in the globular, berry-like fruits. (G. C. n. s., xxi. 117.)

C. pendula (pendulous). A synonym of *C. Fortunei.*

CEPHALOTUS (from *kephalotes*, headed; in reference to the filaments of the stamens being capitate). ORD. *Saxifrageæ.* A very curious cool greenhouse herbaceous perennial, thriving well in a mixture of chopped living sphagnum and sandy, rough peat, well drained. It is very important to ensure porous material for its growth, admitting a free circulation of water. A humid atmosphere in summer is essential; and to secure this, it is best to place a bell glass over the pan in which the plant is grown. In winter, less moisture, both at the roots and in the atmosphere, is needed. Propagated by division, before new growth commences; or by seeds.

C. follicularis (follicled).* New Holland Pitcher-plant. *fl.* white, small, on an erect scape. *l.* all radical and stalked; some are elliptical and flat, and others dilated into pitchers similar to the ascidia of the genus *Nepenthes.* These pitchers vary from 1in. to 3in. in length, and are dark green, tinged with purple; lid netted with veins of reddish-pink. Plant almost stemless. *h.* 2in. to 3in. West Australia, 1822. See Fig. 403.

CERACEOUS. Wax-like.

CERANTHERA. A small genus of African shrubs or trees, now united to *Alsodeia.*

CERASTIUM (from *keras*, a horn; many of the species have capsules exactly the form of an ox's horn). Mouse-ear Chickweed. ORD. *Caryophylleæ.* Decumbent hairy hardy annual or perennial herbaceous plants. Flowers white, small. The two species most generally cultivated are *Biebersteinii* and *tomentosum.* These are grown principally on account of their silvery foliage. All are of very easy culture in ordinary garden soil, or on the rockery. They are readily propagated by divisions; or by cuttings, inserted in the open ground, and in a shady place, after flowering. The species enumerated below are all perennials.

C. alpinum (alpine).* *fl.* white; panicles rather hairy, few-flowered. June, July. *l.* ovate, elliptical, or oblong, covered with long silky hairs, or nearly smooth. *h.* 2in. to 4in. Britain. (Sy. En. B. 223.)

C. Biebersteinii (Bieberstein's).* *fl.* white; stalks erect, dichotomous. Early summer. *l.* woolly, ovate-lanceolate. Stems branching. *h.* 6in. Tauria, 1820. Evergreen. Closely allied to *C. tomentosum,* but with larger leaves and flowers. (B. M. 2782.)

C. Boissieri (Boissier's).* *fl.* white, large; cymes regular, dichotomous. Summer. *l.* sessile, silvery, usually ovate-lanceolate, acute, entire. *h.* 4in. to 1ft. Spain.

C. grandiflorum (large-flowered). *fl.* white, large, conspicuous; peduncles seven to fifteen-flowered, erect; profusely produced. Summer. *l.* narrow, acute, hoary or woolly; margins somewhat revolute. *h.* 6in. Eastern Europe. A strong-growing deciduous species, and consequently should only be cultivated where plenty of room can be allowed it.

C. latifolium (broad-leaved). *fl.* white, solitary, or the peduncle sparingly forked, larger than most of the other species. July. *l.* ovate, slightly stalked, pale green, or slightly glaucous. *h.* 3in to 6in. North Europe (Britain). Deciduous. (Sy. En. B. 224.)

Cerastium—*continued.*

C. tomentosum (downy).* *fl.* white; cymes forked, on erect stalks. Early summer. *l.* oblong-spathulate, upper ones lanceolate, densely clothed with a greyish tomentum. *h.* 6in. Southern and Eastern Europe, 1648. This evergreen species is largely employed in almost all gardens for edgings to summer flower-beds, &c. (S. F. G. 455.)

CERASUS (said to have been first brought from Cerasus, a town in Pontus, in Asia). Cherry. ORD. *Rosaceæ*. Hardy deciduous or evergreen shrubs and trees.

FIG. 403A. FLOWERING BRANCH OF CERASUS ILICIFOLIA.

Flowers white; pedicels one-flowered, rising before the leaves in fascicled umbels from scaly buds, but sometimes rising after the evolution of the leaves in racemes from the tops of the branches. Drupe globose or umbilicate at the base, fleshy, quite glabrous, destitute of bloom, containing a smooth, rather globose, compressed stone. Leaves, when young, conduplicate. By far the larger number of the species are deciduous, but two very important ones are evergreen, viz., the common Laurel (*C. Laurocerasus*), with its numerous varieties, and the Portugal Laurel (*C. lusitanica*). The various species and varieties are propagated by seeds, cuttings, grafting, or budding. The seeds should be sown in autumn, in beds, or they may be kept till spring. Cuttings should be bedded in a semi-shady position, in autumn, or not later

Cerasus—*continued.*

than February, some sharp sand being added to the soil. For culture, &c., of the edible-fruited kinds, *see* **Cherry.**

C. Avium (birds'). Wild Cherry, or Gean. *fl.* rising with the leaves; bud oblong, acute, destitute of leafy scales. April and May. *fr.* roundish-ovate, depressed, black; flesh adhering to the stone, very succulent and sugary, the juice usually coloured. *l.* oval-lanceolate, pointed, serrated, somewhat pendent, slightly pubescent on the under side, and furnished with two glands at the base. *h.* 20ft. to 40ft. England. Deciduous.

C. A. multiplex (double-flowered).* *fl.* smaller than the type, ovate, bearing two or three glands at the base.

C. Caproniana.* Common Cherry. *fl.* rising with the leaves; calyx large, campanulate; peduncles usually thick, stiffish, not long. Spring. *fr.* globose, depressed, with the suture hardly depressed; flesh soft, more or less acid and styptic. *l.* oval-lanceolate, toothed, glabrous. *h.* 15ft. to 20ft. Europe. Small tree, with spreading branches. Of this deciduous species, innumerable varieties have been raised. The most important of the fruit-bearing sorts will be found described under **Cherry.** The double-flowered variety (*multiplex*) is very showy, and useful for forcing and for shrubberies (SYN. *C. ranunculiflora*). (F. d. S. 1805.)

C. caroliniana (Carolina).* *fl.* rather large; racemes axillary, dense, shorter than the leaves. May. *fr.* nearly globose, mucronate. *l.* evergreen, on short petioles, oblong-lanceolate, mucronate, smooth, rather coriaceous, almost entire. North America, 1759.

C. Chamæcerasus. Ground Cherry. *fl.* umbellate; umbels usually sessile; peduncles longer than the leaves when in fruit. May. *fr.* round, reddish-purple, very acid. *l.* obovate, shining, crenated, bluntish, quite glabrous, rather coriaceous, hardly glandular. *h.* 2ft. to 4ft. Europe, 1597. Deciduous. There is a creeping form of this species, *pendula*, and another with variegated leaves.

C. depressa (depressed). *fl.* white; umbels few-flowered, sessile-aggregate. May. *fr.* ovate. *l.* lanceolate-cuneated, a little serrated, glabrous, glaucous beneath. Branches angular, depressed, prostrate. North America, 1805. Deciduous.

C. duracina (hard).* *fl.* white, rising with the leaves; peduncles long, slender. April. *fr.* heart-shaped; suture much depressed, rarely almost obsolete; flesh hard and brittle. *h.* 10ft. to 20ft. A large tree; branches ascending when young, but in the adult state hardly spreading. Deciduous. SYN. *Prunus Cerasus Bigarella.* It is probable that this species, crossed with *C. Avium* has produced the Bigarreau and Heart Cherries.

C. ilicifolia (Holly-leaved). *fl.* white, small, in racemes ½in. to 2in. long. March to May. *fr.* large, ½in. or more thick, usually red, sometimes dark purple or black. California. A very ornamental shrub, with shining dark evergreen foliage; excellent for corridor or cool conservatory. In the open air, it requires a wall, and extra shelter during winter. See Fig. 403A.

C. Juliana (St. Julian's). *fl.* rising with the leaves. *fr.* ovate, depressed, heart-formed; flesh sweet, rather soft. Branches ascending when young, but when in an adult state hardly spreading. *h.* 20ft. to 40ft. South Europe. The varieties of this deciduous species—frequently, and probably correctly, classed as forms of *C. Avium*—are known as Guigniers, or Heaumiers.

FIG. 404. BRANCHLET OF CERASUS LAUROCERASUS.

C. Laurocerasus.* Common Laurel. *fl.* white; racemes shorter than the leaves. April and May. *fr.* ovate, acute. *l.* ovate-lanceolate, remotely-serrated, furnished with two or four glands beneath. *h.* 6ft. to 10ft. Levant, 1629. Evergreen shrub. See Fig. 404. The following varieties are found in gardens, and are all useful for extensive planting in shrubberies or woodlands: *angustifolia* (narrow-leaved); *camelliæfolia* (Camellia-leaved); *caucasica* (Caucasian); *colchica* (Colchican), very useful; *rotundifolia* (round-leaved), and *variegata* (variegated-leaved).

Cerasus—*continued.*

C. lusitanica (Lusitanian).* Portugal Laurel. *fl.* white; racemes erect, axillary, longer than the leaves. June. *fr.* ovate, red when ripe. *l.* evergreen, ovate-lanceolate, serrated, glandless. *h.* 10ft. to 20ft. Portugal, 1648. Evergreen. This is one of the most elegant shrubs grown. There is a variety named *myrtifolia* (Myrtle-leaved) which produces smaller leaves, and is of compact growth. It is frequently called the Upright Portugal Laurel.

C. Mahaleb (Mahaleb). *fl.* white; racemes somewhat corymbose, leafy. April and May. *fr.* ovate-roundish, black, yielding a bitter purple juice, the stain of which is not easily effaced. *l.* broad, roundish-cordate, denticulated, glandular, folded together. *h.* 10ft. South Europe, 1714. The wood is red, very hard, and sweet-scented. Deciduous.

C. occidentalis (Western).* *fl.* white; racemes lateral. *l.* evergreen, glandless, oblong, acuminated, quite entire, glabrous on both surfaces. *h.* 20ft. West Indies, 1784. Stove evergreen tree.

C. Padus. Common Padus, Bird Cherry, or Hagberry. *fl.* white; racemes terminal, elongated, leafy, drooping. April and May. *fr.* round, black, nauseous to most palates, but, infused in gin or whiskey, it greatly improves these spirits. *l.* ovate-lanceolate, rather acuminated. *h.* 10ft. to 30ft. Britain. There are numerous forms of this deciduous species, including the following: ***argentea*** (silver-blotched-leaved), ***aucubæfolia*** (Aucuba-leaved),

Cerasus—*continued.*

bracteosa (long-bracted), *heterophylla* (various-leaved), *parviflora* (small-flowered), and *rubra* (red).

C. pseudo-cerasus.* Bastard Cherry. *fl.* white, racemose. April and May. Branches and peduncles pubescent. *fr.* pale red, small, of a pleasant sub-acid flavour, with a very small stone. *l.* obovate, acuminated, flat, serrated. Branches and peduncles pubescent. *h.* 6ft. to 10ft. China, 1819. This deciduous species bears forcing well. SYN. *Prunus paniculata.* (B. R. 800.)

C. ranunculiflora (Ranunculus-flowered). Synonymous with *C. Caproniana multiplex.*

FIG. 405. FLOWERING BRANCH OF DOUBLE WHITE CHINESE CHERRY (CERASUS SERRULATA).

C. salicina (Willow-leaved). *fl.* white, small, usually solitary, shorter than the leaves. April. *fr.* about the size of that of the Myrobalan Plum. *l.* obovate, acuminated, glandularly serrated, glabrous; stipules subulate, glandular, length of the petiole. *h.* 4ft. to 6ft. China, 1822. Half-hardy deciduous.

C. semperflorens (ever-flowering). All Saints', Ever-flowering, or Weeping Cherry. *fl.* white, axillary, solitary. May. *fr.* red, small, round, watery, of but little value. *l.* ovate, serrated. Branches drooping. *h.* 10ft. to 20ft. 1822. (W. D. B. 131.) The variety *aurea variegata* (golden-variegated) is very handsome.

C. serotina (late). *fl.* white, in racemes terminating leafy branches. *fr.* purplish-black. *l.* lanceolate-oblong, acuminate,

Cerasus—*continued.*

serrated, with incurved, short, or callous teeth. Eastern United States. A large deciduous tree, furnishing valuable timber. (W. D. B. 48.)

C. serrulata (saw-leaved).* Double Chinese Cherry. *fl.* pale white or rose-tinted, double, disposed in fascicles. April. *l.* obovate, acuminated, setaceously serrulated, quite glabrous; petioles glandular. *h.* 15ft. China, 1822. SYN. *C. Sieboldii.* Deciduous. See Fig. 405. (R. H. 1866, 371.)

C. Sieboldii (Siebold's). Synonymous with *C. serrulata.*

C. sphærocarpa (round-fruited). *fl.* white; racemes axillary, erect, small, shorter than the leaves. June and July. *fr.* nearly globose, purple when ripe. *l.* glandless, shining, about 2in. long and 1½in. broad. *h.* 10ft. to 12ft. Jamaica, 1820. Stove evergreen.

C. virginiana (Virginian). Choke-Cherry. *fl.* white; racemes erect, elongated. May and June. *fr.* globose, red. *l.* oblong, acuminated, doubly-toothed, smooth; petioles usually bearing about four glands. Wood beautifully veined with black and white. *h.* 20ft. to 80ft. Eastern United States, 1724. Deciduous.

CERATIOLA (from *keration*, a diminutive of *keras*, a horn; in reference to the stigma radiating into four divisions like little horns, as in the Carnation). ORD. *Empetraceæ.* An upright, much-branched, evergreen, half-hardy shrub, much resembling an Erica. When well grown, it is a very handsome little plant. It thrives well in sandy peat, to which may be added a little very fibry loam. It will probably prove quite hardy in the West of England; but if grown out of doors in other parts of the country, it should have protection during winter. Propagated by cuttings, which should be placed in sandy soil, under a bell glass.

C. ericoides (Heath-like).* *fl.* brownish, sessile, in the axils of the upper leaves, rarely solitary, sometimes verticillate. June. *l.* simple, alternate, exstipulate, spreading, needle-shaped, obtuse, glabrous and shining, about ¼in. long, sometimes crowded as if verticillate. Berries globose, yellow. Florida, Carolina, 1826. (B. M. 2758.)

CERATODACTYLIS. *See* **Llavea.**

CERATOLOBUS (from *keras*, a horn, and *lobos*, a pod; referring to the horned pod-like spathe). ORD. *Palmeæ.* Slender-growing stove palms, of great beauty, and requiring culture similar to **Calamus** (which *see*).

C. concolor (one-coloured). *l.*, sheath sub-strigose; segments green beneath. *fr.* sub-globose. Sumatra.

C. glaucescens (milky-green-leaved).* *l.* pinnate, 1ft. to 2ft. long; pinnæ somewhat cuneate, lengthened out into a tail-like point; edges erose, dark green on the upper surface, grey below; petioles sheathing, densely armed with slender spines. Java. This makes an elegant table plant.

CERATONIA (from *keration*, a horn or pod; in allusion to the shape of the pods). Algaroba Bean, or Carob. This plant is called by Theophrastus, *Keronia*; by Dioscorides, *Kerateia.* ORD. *Leguminosæ.* An evergreen tree, with a thick trunk, and abruptly-pinnate, coriaceous, shining leaves. It thrives well in the South of England, in any ordinary garden soil, if afforded the protection of a wall, and slightly sheltered during winter. Ripened cuttings will root if planted in sand, with a hand glass placed over them.

C. Siliqua (podded). Bean-tree, Carob-tree, or Locust-tree. *fl.* red, small, racemose. September. *l.*, leaflets oval, obtuse, flat, coriaceous, shining, dark green. Plant unarmed. *h.* 30ft. to 50ft. South Europe, 1570. This tree is much cultivated in the South of Europe for the sake of the pods, the pulp of which is eaten; these are 4in. or more in length, and are, as well as the seeds, of a dusky ferruginous colour. (A. B. R. 567.)

CERATOPETALUM (from *keras*, a horn, and *petalon*, a petal; the petals are jagged so as to resemble a stag's horn). ORD. *Saxifrageæ.* A genus containing a couple of species of greenhouse trees, limited to New South Wales. Flowers small, in terminal trichotomous cymes or corymbose panicles. They have opposite leaves, with one to three digitate leaflets, articulate on the petiole; stipules very small, caducous. For culture, *see* **Callicoma.**

C. apetalum (without petals). *fl.* greenish-yellow. *l.*, leaflets usually solitary (occasionally three on luxuriant shoots or young trees). *h.* 50ft. to 60ft.

C. gummiferum (gum-bearing). *fl.* yellow, in terminal panicles. June. *l.* ternate; leaflets three, lanceolate, serrated, coriaceous, and smooth. *h.* 30ft. to 40ft. 1823.

CERATOPTERIS (from *keras*, a horn, and *pteris*, a fern). ORD. *Filices.* A very curious stove aquatic annual monotypic genus. Sori placed on two or three veins, which run down the frond longitudinally, and are nearly parallel with both the edge and midrib. Capsules scattered on the receptacles, sessile, globose, with a ring which is either complete, or more or less partial or obsolete. Involucre formed of the reflexed margin of the frond, those of the two sides meeting against the midrib. When nicely grown in water, this is a very handsome plant, and not inaptly called the Floating Stag's-horn Fern. The spores must be preserved and sown early in spring, in a pot of very moist loam; they germinate rapidly if plunged in water, in February. Young plants may also be obtained from the proliferous buds, by pegging the sterile fronds on to a surface of moist earth. It succeeds best when the pot containing it is plunged to the rim in water.

C. thalictroides (Thalictrum-like).* *sti.* tufted, thick, inflated. *fronds* succulent, the barren ones floating, simple or slightly divided when young, bi- or tripinnate, with narrow linear segments, when mature; fertile ones bi- or tripinnate; ultimate segments pod-like. Tropics, in quiet waters. SYN. *Parkeria pteroides.*

CERATOSTEMA (from *keras*, a horn, and *stemon*, a stamen; in reference to the anthers being bluntly spurred at the base). ORD. *Vacciniaceæ.* Very pretty greenhouse evergreen shrubs. Flowers almost sessile, lateral and terminal, pedunculate; corollas large, scarlet. Leaves oblong, on short petioles, almost veinless, coriaceous, rounded, and sub-cordate at the base. They require a compost of sandy loam and peat; and are readily increased by cuttings, planted in sand, and placed under a glass.

C. longiflorum (long-flowered). *fl.* crimson. Andes of Peru, elevation 12,000ft. above sea-level, 1846. (B. M. 4779.)

C. speciosum (showy).* *fl.* bright orange-red, about 1¾in. long; spikes short, axillary, secund, drooping. *l.* coriaceous, ovate-lanceolate, with a short twisted petiole. Ecuador, 1870.

CERATOZAMIA (from *keras*, a horn, and *Zamia*, another genus of *Cycadaceæ*, which this much resembles; in reference to the horned scales of the cones). ORD. *Cycadaceæ.* Stove plants, distinguished from *Zamia* in having the thickened apices of the scales of the male and female cones bicornute (*i.e.*, two-horned), instead of hornless. Leaflets articulated. Trunks short. They require a moist atmosphere, and a compost of rich light loam and rotten leaves. Propagated by seeds, and sometimes by suckers and divisions; but imported plants give most satisfaction.

C. fusco-viridis (dusky-green).* *l.* 3ft. to 4ft. long, broadly pinnate, of a fine arching habit; pinnæ deep green, 6in. to 7in. long, sessile, lanceolate, and tapering to a longish point. Trunk furnished with broadish scales, surrounding each of the leafstalks, which are nearly terete above and asperous along the edges. Young leaves of a rich bronzy-chocolate colour, but gradually changing to olive-green and, finally, deep green. Mexico, 1879.

C. Kusteriana (Kuster's). *l.* 2ft. to 4ft. long, pinnate, spreading; pinnæ semi-lunate, tapering to a sharp point, coriaceous, 6in. to 10in. long, about ½in. broad, dark green. Mexico.

C. mexicana (Mexican).* *Male:* *l.* pinnate, about 6ft. long; pinnæ coriaceous, sessile, cordate-lanceolate, tapering to a sharp point, 9in. to 12in. long, 1½in. broad, dark green; petioles spiny for about half their length, very stout at the base. Mexico. *Female:* *l.* pinnate, 3ft. to 4ft. long, pendulous; pinnæ 6in. to 10in. long, tapering to a point, rich dark green on both surfaces; naked portion of petiole armed with short white spines. Stem stout. Mexico.

C. Miqueliana (Miquel's).* *l.* pinnate, spreading; pinnæ coriaceous, oblong, abruptly tapering to a point, 6in. to 12in. long, 2in. broad, dark green. Stem slender. Mexico.

CERBERA (so named from Cerberus, of mythological note, on account of its poisonous qualities). ORD. *Apocynaceæ.* Stove evergreen shrubs or trees. Peduncles extra-axillary at the tops of the branches; corolla funnel-shaped; tube pilose inside at top. Leaves scattered, quite entire. They require a rich fibry loam, and cuttings of young, rather ripe shoots will root in sand, if planted in April, in bottom heat.

C. Manghas (Manghas). *fl.* white, with a pink centre; petals ovate, with an incurved, sub-retuse apex; panicle terminal, corymbose, large, open. July to September. *l.* oblong-lanceolate, acute, tapering downwards, approximate, shiny. *h.* 20ft. Stove tree. (B. M. 1845.)

CERCIS (from *kerkis*, a shuttlecock; a name given by Theophrastus to this tree). Judas-tree. ORD. *Leguminosæ*. Ornamental, hardy, deciduous trees. For their singular beauty, they deserve a place in every garden and shrubbery. When the trees have arrived at a good size, the branches are so thickly beset with flowers as scarcely to be seen;

FIG. 406. FLOWERING BRANCH OF CERCIS SILIQUASTRUM.

and the singular shape of the leaves—which appear after the flowers—makes a very agreeable variety in summer. The trees prefer a deep, free, rich, sandy soil. They are generally raised from seeds, which should be sown about

FIG. 407. CEREUS GRANDIFLORUS.

Cercis—*continued.*

the end of March, on a bed of light soil, in a gentle heat. The young plants will produce flowers in three or four years; they may also be propagated by layers, but plants raised from seeds thrive best.

C. canadensis (Canadian).* *fl.* red; pedicels one-flowered, rising from the trunk and branches in fascicles. May. *l.* cordate, acuminate, villous in the axils of the veins beneath. *h.* 12ft. to 20ft. Canada, 1730.

C. chinensis (Chinese).* This recently-introduced species closely resembles *C. canadensis* in foliage; the pink flowers are larger. SYN. *C. japonica.*

C. japonica (Japanese). A synonym of *C. chinensis.*

C. Siliquastrum.* Common Judas-tree; Love-tree. *fl.* bright purple; pedicels one-flowered, rising from the trunk and branches in fascicles. May. *l.* simple, cordate, very blunt, emarginate, quite glabrous. *h.* 20ft. to 30ft. South Europe, 1596. In northern parts of this country, this fine species requires to be planted against a wall, in which situation it thrives admirably. The wood is very beautiful and veined with black, takes an excellent polish, and may be utilised for many purposes. See Fig. 406. (B. M. 1138.) There are varieties with flesh-coloured and white flowers.

CERCOCARPUS (from *kerkis*, a shuttle, and *karpos*, a fruit; in reference to the shape of the fruit). ORD. *Rosaceæ*. Greenhouse or half-hardy evergreen shrubs or small trees. They thrive in a mixture of peat and loam. Cuttings will root if planted in a pot of sand, with a hand glass placed over them.

C. fothergilloides (Fothergilla-like).* *fl.* in axillary umbellate fascicles; calyx purple, with a cylindrical permanent tube. May. *l.* alternate, entire, nearly elliptic, coriaceous, glabrous, furnished with two petiolar stipules. *h.* 12ft. Mexico, 1828.

FIG. 408. CEREUS NYCTICALUS.

CEREUS (from *cereus*, pliant; in reference to the shoots of some species). Torch Thistle. ORD. *Cacteæ*. Fleshy grotesque greenhouse shrubs, with a woody axis, and medulliferous inside; angles vertical, bearing fascicles of spines, regularly furrowed. Flowers large, rising from

Cereus—*continued.*

the fascicles of spines, or indentures on the angles; sepals very numerous, imbricated, adnate to the base of the ovary, united into an elongated tube; outer sepals the shortest, forming the calyx; middle ones longer and coloured, innermost ones petaloid; stamens very numerous, united with the tube; style filiform, multifid at the apex. Berry areolate, tubercular or scaly, either from the remains of the sepals, or from their cicatrices when they have fallen off. For culture, *see* **Cactus.**

Of this large genus, the following species are the best, and most easily obtained. Numerous others are offered for sale, principally by continental growers.

C. coccineus (scarlet).* *fl.* scarlet, large, numerous. September. Plant with long joints, rooting, deep green, triangular; ribs compressed, repand; prickles rising from yellow tomentum, radiating ones few, pilose, white, and four rather recurved, stiff, fulvous central ones in each fascicle. Brazil, 1828.

C. crenulatus (crenulate). Plant simple, erect, greyish-green; with eight blunt tubercular ribs, and narrow recesses; areolæ, while young, convex and velvety; prickles fourteen in each fascicle, white, setaceous, stiff, outer ten radiating, central four diverging, and longer than the others. Stem 6in. high, and 2in. in diameter. Mexico, 1822.

FIG. 409. CEREUS PLEIOGONUS.

C. fimbriatus (fringed).* *fl.* rose-coloured, campanulate, with few petals, which are fringed; tube short; stamens very numerous. *fr.* globose, red, size of an orange, beset with prickly tubercles. Plant tall, erect, bluntly eight-angled; prickles setaceous, white. *h.* 18ft. to 25ft. St. Domingo, 1826.

C. flagelliformis (whip-formed).* *fl.* red or pink, very handsome; style rather shorter than the petals. March. Stems prostrate, creeping, with about ten angles; tubercles crowded, bearing bristles. Peru, 1690. (B. M. 17.)

C. fulgidus (glittering).* *fl.* orange-scarlet, having the inner petals blood-red, and glossy with a metallic lustre, 6in. to 7in. across.

Cereus—*continued.*

Tropical America, 1870. A very handsome tall-growing plant, with three to four-angled stems, spiny at the nodes. (B. M. 5856.)

C. grandiflorus (large-flowered).* *fl.* very large. June to August. Stems rooting, diffuse, climbing, five to six-angled; bristles 5in. to 8in. each, fascicled, hardly longer than the down from which they proceed. West Indian Islands, 1700. The flowers continue about six hours in full bloom. They begin to open between seven and eight o'clock in the evening, and are fully blown by eleven. By three or four o'clock in the morning, they fade; but, during their short existence, there is hardly any flower of greater beauty, or that makes a more magnificent appearance. The calyx of the flower, when open, is nearly 1ft. in diameter; the inside, being of a splendid yellow colour, appears like the rays of a bright star; the outside is of a dark brown. The petals, being of a pure white, contribute to the lustre; the vast number of recurved stamens in the centre of the flower make a fine appearance. Add to all this the strong, sweet fragrance, and there is scarcely any plant which so much deserves a place in the stove, as this, especially as it may be trained against the wall, where it will not take up any room. See Fig. 407. (B. M. 3381.)

FIG. 410. CEREUS SERPENTINUS.

C. hexagonus (six-angled). *fl.* solitary, 6in. long; the sepals along the tube greenish and irregularly imbricated; limb a little expanded, reddish outside and white inside; stamens greenish. Plant simple, erect, large, usually with six strong ribs; fascicles of spines middle-sized; prickles short, brown. *h.* about 40ft., usually without any branches. South America, 1690.

C. lividus (livid). *fl.* white, with a yellow-green tinge towards the outside, 10in. in diameter. June. Plant erect, very sparingly branched; stems five to six-angled, constricted or jointed at intervals, with thick, flat, straight, round-edged ribs, 1in. or more in depth. Brazil, 1868.

C. Macdonaldiæ (Macdonald's).* *fl.* opening during the night, when fully expanded 12in. to 14in. diameter; sepals bright red and orange, radiating, and very numerous; petals delicate white. July. Stems cylindrical, creeping, branched, slender. Honduras. This is a magnificent species. (B. M. 4707.)

Cereus—*continued.*

C. nycticalus (flowering at night). *fl.* white, opening at night, scentless, similar in form to, but larger than, those of *C. grandiflorus*. Plant with sub-erect, long, jointed, climbing branches, some cylindrical with four to five series of spines, others with from four to six ribs. Spines small, very rigid, each cluster containing about four, mixed with white, often deciduous setæ. Mexico. Suitable for planting against the wall of a warm greenhouse. See Fig. 408.

C. pentagonus (five-angled).* *fl.* white, large. July. Plant erect, jointed, slender, pale green, five-angled; ribs repand; prickles naked at the base, nearly equal, slender, straw-coloured, with five to six radiating ones in each fascicle, and one central one. Stems varying, with three, four, or five angles. *h.* 3ft. South America, 1769.

C. plciogonus (many-stamened). *fl.* purplish-red. Plant light olive-green, erect, cylindrical, with about thirteen very small ribs; the areolæ are slightly swollen at the summit, then form small tubercles more and more distinct until, at the base, the ribs almost completely disappear. Spines about thirteen, the exterior ones radiating pretty regularly; the upper ones the shorter, and the interior ones more or less erect. Native country unknown. *h.* 6in. See Fig. 409.

C. quadrangularis (four-angled).* *fl.* white, opening at night, beautiful and sweet-scented. Plant creeping, three to four-angled; angles hardly channelled; spines five to seven in each fascicle, hardly stellate. West Indies, 1809.

C. repandus (repand). *fl.*, tube green, unarmed; inner calycine or corolline lobes white; outer lobes of calyx narrow and much acuminated, almost exceeding the inner ones in length. May. Plant long, erect, with eight to nine blunt angles; angles rather undulated; spines longer than the wool from which they issue. *h.* 10ft. to 20ft. Caribbee Islands, 1728. (B. R. 336.)

C. serpentinus (serpentine).* *fl.* large, very handsome; lobes bluntish, outer ones greenish, middle ones purplish, inner ones white; floral tubes very bristly at the base. Plant creeping, flexuous, and somewhat climbing, with eleven to twelve very blunt angles; bristles in fascicles, much longer than the wool from which they issue, but which at length falls off. *h.* 3ft. to 4ft. South America, 1817. See Fig. 410. (B. M. 3566.)

C. speciosissimus (most showy).* *fl.* large, of a beautiful scarlet colour, sometimes violaceous inside; petals spreading; stamens white. July, August. Plant erect, three to four-angled; angles toothed; prickles subulate, straight, rising from white tomentum. *h.* 3ft. to 6ft. Mexico, 1816. (B. M. 3822.)

C. triangularis (three-angled). *fl.* greenish on the outside, and white inside, larger than that of most other species. July. Plant creeping, trigonal; prickles short, four in a fascicle, somewhat decussate. *h.* 1ft. to 2ft. Mexico, 1690. (B. M. 1884.)

CERIFEROUS. Bearing or producing wax.

CERINTHE (from *keros*, wax, and *anthos*, a flower; bees are supposed to obtain wax largely from the flowers). Honeywort. ORD. *Boragineæ*. Glabrous, glaucous, hardy annuals or perennials, with terminal leafy racemes of tubularly campanulate, drooping, variegated flowers. All are of easy culture in common garden soil. Seeds should be sown in spring, in sunny spots. *C. maculata*, being a perennial, requires to be planted in a sheltered, dry situation, or the fleshy roots will be apt to rot.

C. aspera (rough). *fl.*, corolla yellow, with a brownish-purple tube, cylindrical, five-toothed, twice as long as the calyx. July. *l.* oblong, denticulately ciliated, rough beneath. *h.* 1ft. to 2ft. South Europe, 1633. Annual. (S. F. G. 170.)

C. glabra (glabrous). *fl.*, corolla yellow at bottom and violaceous at top, five-toothed. June. *l.* ovate-lanceolate, quite entire. *h.* 1ft. European Alps, 1827. Annual.

C. maculata (spotted).* *fl.*, corolla yellow, marked with five dark purple spots on the tube; ventricose, five-cleft to the middle. June. *l.* cordate-ovate, quite entire, glabrous. *h.* 1ft. to 1½ft. South and Eastern Europe, 1804. Perennial.

C. major (largest).* *fl.*, corolla yellow at bottom and purple at top; ventricose at top, five-toothed. July. *l.* cordate-ovate, denticulately ciliated, all fleshy, stem-clasping, glabrous above, densely beset with white dots, rough beneath. *h.* 1ft. Switzerland, 1596. Annual. (B. M. 333.)

C. minor (smaller).* *fl.*, corolla yellow, sometimes with five brownish spots, five-cleft, with conniving segments. June. *l.* cordate-ovate, quite entire, glabrous, densely beset with minute white warts above. *h.* 1ft. to 1½ft. Middle and South Europe, 1570. Annual. (J. F. A. 2, 124.)

C. retorta (twisted).* *fl.*, corolla with a yellow tube and a violaceous limb, retorted, clavately cylindrical, with a constricted five-toothed mouth. July. *l.* stem-clasping, somewhat spathulate, emarginate at top, with a short mucrone, beset with white warts on both surfaces. *h.* 1½ft. Greece, &c., 1828. Annual. (S. F. G. 171.)

CERNUOUS. Inclining a little from the perpendicular; drooping.

CEROPEGIA (from *keros*, wax, and *pege*, a fountain; referring to the form and waxy appearance of the flowers). ORD. *Asclepiadaceæ*. Usually twining, sometimes erect, herbs, often with tuberous roots. Corolla funnel-shaped, more or less ventricose from the base; segments of the limb narrow, sometimes cohering at the apex. Leaves opposite. The corona consists of a single whorl of five to ten leaves, opposite the stamens, and alternating with the segments of the corolla. Ceropegias are very curious and pretty stove or greenhouse plants, thriving in a mixture of peat, sand, and vegetable mould. Cuttings of small side shoots, made in April, will root in sand, in heat, with or without a glass covering. They should have little or no water, when in a dormant state, particularly the bulbous-rooted kinds.

C. acuminata (taper-pointed). *fl.* large, erect, with a greenish tube, and a purple limb; segments united at apex; corolla ventricose at base; tube sub-clavate; peduncles many-flowered. June. *l.* linear-lanceolate, 2in. to 4in. long, hardly ½in. broad, attenuated at apex. Root tuberous. Coromandel, 1820. Stove.

C. Barklyi (Barkly's).* *fl.* scarcely 2in. long, with a narrow, curved, pinkish tube, dilated into a globose base, and expanded above into a funnel-shaped limb, divided into five long filiform segments, coherent at the incurved tips. May. *l.* opposite, lanceolate, white-veined. Root tuberous. South Africa, 1877. Greenhouse. (B. M. 6315.)

C. Bowkeri (Bowker's). *fl.* solitary, shortly-stalked; sepals pale green, spotted with brown; corolla pale yellowish-green, 1½in. long (including the reflexed limb). *l.* linear, sub-acute, sessile. Root a tuber. *h.* 1ft. Caffraria, 1862. Greenhouse. (B. M. 5407.)

C. bulbosa (bulbous). *fl.* large, erect, with a greenish tube and a purple limb, having the segments united at the apex; tube of corolla sub-clavate; peduncles many-flowered, shorter than the leaves. April. *l.* from almost orbicular to lanceolate, acuminated. Root tuberous. Coromandel, 1821. Stove.

FIG. 411. FLOWERING BRANCH OF CEROPEGIA ELEGANS.

C. elegans (elegant).* *fl.* purple; corolla with a clavate tube, a hemispherical limb, and broad ligulate segments, which are shorter than the tube, and ciliated with long hairs; peduncles

Ceropegia—*continued.*

one to six-flowered, shorter than the leaves. *l.* oblong, or oblong-lanceolate, acuminated. Root fibrous. India, 1828. Stove. See Fig. 411. (B. M. 3015.)

C. Gardnerii (Gardner's).* *fl.* creamy-white, purple-blotched. *l.* lanceolate, acuminate, glabrous. Ceylon, 1860. An elegant greenhouse twiner. See Fig. 412. (B. M. 5306.)

C. juncea (rush-like). *fl.* greenish yellow, and elegantly variegated with purple, large; corolla clavate, curved, ventricose at the base; peduncles few-flowered. *l.* small, sessile, lanceolate, acute. India, 1822. Stove.

C. Sandersoni (Sanderson's).* *fl.* pale green, mottled and veined with darker green, with a peculiar, translucid appearance, beautiful, large; the five petals uniting to form an umbrella-like cap, which is ciliated along the margin, with flat white, capillary processes; peduncles axillary, three to four-flowered. Summer. *l.* ovate-cordate, thick, fleshy, shortly petiolate. Natal, 1868. Greenhouse. (G. C. 1870, 173.)

C. stapeliæformis (Stapelia-formed). *fl.* purple, sessile, rising from the axils of the leaves. July. *l.* very minute, ternate, almost invisible, cordate, cuspidate. Plant procumbent. Cape of Good Hope, 1824. Greenhouse.

C. Thwaitesii (Thwaites').* *fl.* with a narrow funnel-shaped tube, 1½in. long, very narrow below, but much widened above, and almost globose towards the top; tube yellow; the upper part of the corolla beautifully sprinkled with dark blood-red spots; produced in axillary, three to five-flowered, umbellate racemes. Ceylon, 1851. Stove. (B. M. 4758.)

C. Wightii (Wight's). *fl.* green, purple; corolla spherically ventricose at the base; tube slender; segments of the limb downy. August. *l.* ovate, acute, fleshy. Plant twining. *h.* 5ft. India, 1832. Stove.

CEROXYLON (from *keros*, wax, and *xylon*, wood; the trunk is coated with wax). ORD. *Palmeæ*. A very handsome greenhouse palm, for sub-tropical gardening perhaps unequalled, if placed in a sheltered situation, away from the direct rays of the sun. It thrives in a compost of loam and peat in equal parts. Increased by imported seeds.

C. andicola (Andes).* *fl.* sometimes perfect, at others unisexular; sepals and petals three-parted; spathe entire, quite covering the flower-spike. *l.* pinnate, 2ft. to 12ft. in length; petioles erect, somewhat ferruginous at the base, slightly arching at the apex; pinnæ acuminate, 2ft. in length, 1½in. in breadth, patent; upper side full, deep shining green; lower side silvery-white. *h.* 50ft. New Grenada, 1845.

CESPEDESIA (named after Juan Maria Cespedes, a priest of Santa Fé de Bogota). ORD. *Ochnaceæ*. A Theophrasta-like stove tree. For cultivation, *see* **Ochna.**

C. Bonplandii (Bonpland's).* *fl.* orange-yellow. *l.* very large, obovate, with a bicrenated margin, and the upper side strongly marked with transverse veins. Tropical America, 1878.

CESTRUM (from *kestron*, an ancient Greek name). ORD. *Solanaceæ*. Including *Habrothamnus*. An extensive genus of stove, greenhouse, or half-hardy shrubs. Flowers cymose or fascicled; cymes corymbose or panicled; corolla with an elongated tube, widening gradually to the top; limb five-parted, sub-plicate, spreading or revolute, regular, conduplicate in æstivation. Leaves alternate, entire. This very ornamental genus of shrubs are useful subjects either as pot plants or as climbers; but plenty of pot room is, under all circumstances, necessary. A free and moderately rich soil is most suitable. Propagated by cuttings, in August, the same being potted off as frequently as the roots reach the sides of the pots. They should be pinched back early in January, to cause a bushy growth; the following season, they do better, as a rule, if potted and grown on in frames or out of doors. Where Cestrums are intended to be grown as wall-subjects, they should be planted out in the greenhouse or conservatory borders, and receive liberal treatment. They generally do well in a house where a temperature of about 40deg. or 45deg. is maintained during winter.

FIG. 412. FLOWERING STEMS OF CEROPEGIA GARDNERII.

C. alaternoides (Alaternus-like). *fl.* white, disposed in nearly sessile racemes. July to August. *l.* alternate, ovate, undulated, coriaceous, shining. *h.* 3ft. Trinidad, 1840. A stove evergreen shrub. (B. M. 2929.)

C. aurantiacum (orange).* *fl.* orange, sessile, spicate, panicled. August. *l.* oval, undulated. *h.* 4ft. Guatemala, 1843. An excellent cool-house evergreen shrub. (B. R. 1845, 22.)

C. corymbosum (corymbose). *fl.* red; corymbs terminal, forming a dense leafy panicle. May to June. *l.* ovate-lanceolate, entire. *h.* 5ft. Mexico, 1843. A handsome greenhouse evergreen shrub. SYN. *Habrothamnus corymbosus*. (B. M. 4201.)

C. elegans (elegant).* *fl.* purplish-red, numerously produced, in dense terminal cymes; petals ciliated. Summer. *l.* ovate-lanceolate. Branches and under sides of leaves downy. Mexico, 1844. A well-known greenhouse or half-hardy evergreen, with a climbing habit. SYN. *Habrothamnus elegans*. (B. R. 1844, 43.) The variety named *argentea* is one of the best climbers, having variegated leaves, the surface of which is creamy white, faintly tinged with rose, and relieved by irregular blotches of light green.

C. fasciculatum (fascicled).* *fl.* purplish-red, terminal, cymosely capitate, involucrated; corolla urceolate, with ciliated segments. Early spring. *l.* ovate, entire. Plant downy. *h.* 5ft. Mexico, 1843. A greenhouse evergreen shrub. SYN. *Habrothamnus fasciculatus*. (B. M. 4183 and 5659.)

C. Newelli (Newell's).* *fl.* bright crimson, large, produced in dense terminal clusters. *l.* neat, smooth. *h.* 6ft. This is described as a very ornamental greenhouse plant, of free growth. SYN. *Habrothamnus Newelli*.

Cestrum—*continued.*

FIG. 413. FLOWERING BRANCH OF CESTRUM PARQUI.

C. Parqui (Parqui). *fl.* whitish-yellow, disposed in panicles, very fragrant at night. June and July. *l.* lanceolate, 3in. to 5in. long, attenuated at both ends, sub-undulated. *h.* 7ft. Chili, 1787. This evergreen shrub will succeed in the open air if accorded the protection of a wall, and sheltered during winter. See Fig. 413. (B. M. 1770.)

C. roseum (rose).* *fl.* rose-coloured, sessile, capitate, involucrate; peduncles terminal and axillary, three to six-flowered, July. *l.* oblong, bluntish, downy. *h.* 4ft. Mexico, 1850. Greenhouse evergreen shrub. SYN. *Habrothamnus roseus.*

CETERACH. *See* **Asplenium.**

CETONIA AURATA. *See* **Rosechafer.**

CEUTORRHYNCHUS SULCICOLLIS. *See* **Cabbage Gall Weevil** and **Turnip Gall Weevil.**

CHACO, or **CHOCO.** *See* **Sechium.**

CHÆNESTES. *See* **Iochroma.**

CHÆNOSTOMA (from *chaino*, to gape, and *stoma*, a mouth; in reference to the wide throat of the corolla). ORD. *Scrophularineæ.* Very pretty greenhouse herbs or under-shrubs. Flowers axillary or racemose, on longish pedicels. Leaves nearly all opposite, toothed, rarely quite entire. They are of easy culture in ordinary garden soil. Seeds should be sown thinly in a hotbed, in March; and when the seedlings are large enough to handle, they should be pricked out thinly, and transferred to the flower garden, in May, where they will prove very ornamental throughout the summer. Cuttings may be made in autumn, and placed in a greenhouse or cold pit during the winter.

C. cordata (heart-shaped). *fl.* white, axillary, pedicellate. June. *l.* petiolate, ovate-roundish, toothed. Branches herbaceous, prostrate, somewhat radicant, hairy. *h.* 1½ft. South Africa, 1816.

C. hispida (hairy). *fl.* white, axillary, pedicellate; superior ones loosely racemose. June to August. *l.* ovate or oblong, coarsely toothed. Branches shrubby, procumbent or divaricate, hairy. *h.* 1ft. Cape of Good Hope, 1816. (R. G. 448.)

C. linifolia (Flax-leaved).* *fl.* white, yellow, racemose. November. *l.* oblong-lanceolate or linear, quite entire. *h.* 1ft. Cape of Good Hope, 1820. Shrubby. (P. F. G. iii., p. 7.)

Chænostoma—*continued.*

C. polyantha (many-flowered).* *fl.* lilac, yellow; corolla funnel-shaped; racemes loose. June. *l.* ovate, toothed, cuneated at the base; upper ones oblong. Herbaceous, much branched at the base. *h.* 4in. South Africa, 1844. (B. R. 33, 32.)

CHÆROPHYLLUM (from *chairo*, to rejoice, and *phyllon*, a leaf; in reference to the smell of the leaves). ORD. *Umbelliferæ.* An extensive genus of hardy herbaceous plants, of scarcely any horticultural interest. Flowers white, sometimes rose; involucre none, or of few leaves; involucels of many leaves. Leaves decompound; leaflets toothed or multifid. All the species are of the easiest possible culture in any soil. Propagated by seeds, sown in the open, during spring.

C. bulbosum (bulbous). Bulbous-rooted Chervil. *fl.* white. June. *l.* supra-decompound; lower ones pilose at the petioles, superior ones glabrous; segments multifid, linear. Stem beset with retrograde hairs at the bottom. *h.* 3ft. to 6ft. Europe, &c., 1726. *See also* **Chervil, Bulbous-rooted.**

CHÆTANTHERA (from *chaite*, a bristle, and *anther*, an anther; the anthers being furnished with tufts of bristly hairs). ORD. *Compositæ.* Pretty half-hardy herbaceous annuals or perennials, allied to *Ainslæa.* Involucre many-leaved, ciliated; florets of ray linear, three-toothed, with a fine bifid spiral segment at the divisions; receptacle flat, naked; pappus hairy. They thrive best in a compost of peat and loam. Propagated by divisions of the root, in March or April; or by seeds, sown in gentle heat, in spring.

C. ciliata (ciliated). *fl.-heads* yellow. July. *h.* 2ft. Chili, 1822. Annual.

C. serrata (saw-leaved). *fl.-heads* golden yellow, solitary, terminal. *l.* narrow, channelled, armed with short spiny teeth. *h.* 6in. Chili, 1832. Perennial. (S. B. F. G. ser. ii., 214.)

CHÆTOCALYX (from *chaite*, a bristle, and *kalyx*, a calyx; in reference to the calyx being covered with spiny bristles). ORD. *Leguminosæ.* Stove evergreen twiners. For culture, *see* **Clitoria.**

C. vincentinus (St. Vincent's). *fl.* yellow; pedicels filiform, one-flowered, rising in numbers from the axils of the leaves. May, August. *l.* impari-pinnate, with two pairs of oval, mucronate, exstipellate leaflets. Stipules lanceolate-linear, spreading, deflexed. West Indian Islands, 1823. SYN. *Glycine vincentina.* (B. R. 799.)

FIG. 414. FLOWERING BRANCH OF CHAMÆBATIA FOLIOLOSA.

CHÆTOGASTRA (from *chaite*, a bristle, and *gaster*, a belly; in allusion to the tube of the calyx being beset with bristles or scales). ORD. *Melastomaceæ*. The plants formerly placed here are now generally distributed in the genera *Brachyotum* and *Pleroma*. Greenhouse or stove shrubs or herbs, for the most part clothed with strigose hairs. Flowers terminal. Leaves three to five-nerved, quite entire, or hardly serrulated. They are of easy culture in peat and loam. Propagated by seeds, sown in March; or by cuttings (of the perennials), in sandy peat.

C. gracilis (slender).* *fl.* red, lilac, axillary; pedicels one-flowered; terminal ones three-flowered. *l.* almost sessile, lanceolate-linear, acute, quite entire, villous. Plant herbaceous, erect, nearly simple, naked at the apex. *h.* 1ft. Brazil, 1848. Stove perennial.

C. lanceolata (lance-shaped-leaved). *fl.* white; peduncles trichotomous, axillary and terminal. January. *l.* petiolate, broadly lanceolate, acuminated, serrulately ciliated, villous on both surfaces. *h.* 1ft. Peru, 1820. Stove annual.

C. strigosa (short-bristled).* *fl.* rosy-purple; cymes terminal, pedunculate, few-flowered. August. *l.* on short petioles, ovate, acute, hardly three-nerved, quite entire, with a few thick, scattered, adpressed bristles on the upper surface. *h.* 1ft. West Indies, 1848. Greenhouse evergreen shrub.

CHALAZA. That part of a seed where the nucleus joins the integuments.

CHAMÆBATIA (from *chamai*, on the ground, dwarf, and *batos*, a bramble; referring to its low growth and bramble-like flowers). ORD. *Rosaceæ*. A very pretty half-hardy evergreen shrub, thriving in a cool frame or greenhouse, in light loam, to which may be added a little peat. Cuttings should be struck in sand, in a cool frame.

C. foliolosa (leafleted).* *fl.* white, about ¾in. in diameter; cymes four to five-flowered, terminal. *l.* broadly-ovate, about 2in. long, tripinnately dissected. Young shoots clothed with a glandular pubescence. *h.* 2ft. to 3ft. Sierra Nevada, 1859. See Fig. 414. (B. M. 5171.)

CHAMÆCISTUS. *See* **Rhododendron Chamæcistus.**

CHAMÆCYPARIS (from *chamai*, on the ground, i.e. dwarf, and *Kuparissos*, *Cypress*; the Bastard or Dwarf Cypress). White Cedars. SYN. *Retinospora*. ORD. *Coniferæ*. Hardy evergreens. The present genus ranks extremely close to *Cupressus*, the principal distinction between the two being the more numerous ovules beneath the fertile scales of the latter. They are very pretty, and thrive best in a moist soil, in a rather protected situation. Propagated freely by seeds; but mainly by cuttings, put in during October. Select young side shoots, with a heel; insert in well-drained pots of sandy soil, and place in a close cold frame, keeping fairly moist through the winter. In February, they will be calloused, and should be placed in gentle heat; they will then root freely. This genus, like most others of the same order, is overloaded with synonyms, and mere varieties are often elaborated into species—most of them known in gardens under the name of *Retinospora*, others as *Cupressus*.

C. Boursierii (Boursier's). A synonym of *C. Lawsoniana*.

C. decussata (decussate). A synonym of *C. ericoides*.

C. ericoides (Heath-like). *l.* linear, spreading, densely arranged in four ranks on the slender branchlets, somewhat rigid and acute; bright green above, glaucous beneath, assuming a ruddy tint in winter. Branches very numerous, furnished with short branchlets. *h.* 3ft. to 4ft. A well-known dwarf, compact, conical bush, of garden origin. SYNS. *C. decussata*, *Retinospora decussata* and *juniperoides*.

C. filicoides aurea (golden fern-like). A synonym of *C. tetragona aurea*.

C. filifera (thread-bearing).* *l.* subulate, pointed, distant, in alternate pairs, fulvous-green colour. Branches spreading; secondary ones alternate, long, distant, furnished, on one side principally, with numerous thread-like pensile branchlets of various lengths; terminal ones longer, filiform. Japan, 1867. A dwarf tree, with irregular outline. SYN. *C. pisifera filifera*.

C. Keteleeri (Keteleer's). A synonym of *C. obtusa*.

C. Lawsoniana (Lawson's).* *fl.*, male catkins bright crimson, terminal, numerous, produced when the trees are in a young state. *l.* dark glossy green, more or less tinged with a glaucous hue, very minute and closely imbricated, obtuse or acute, usually furnished with an obscure tubercle towards the apex, *cones* about the size of large peas, and produced in great profusion. Branches short, and spreading; branchlets crowded,

Chamæcyparis—*continued.*

pendulous, fern-like, and feathery. Trunk comparatively slender. *h.* 75ft. to 100ft. North California, 1853. A very splendid hardy evergreen tree, usually known in gardens under the name of *Cupressus*. It is easily propagated by seeds, but the numerous beautiful varieties are best increased by grafting upon seedling

FIG. 415. CHAMÆCYPARIS LAWSONIANA.

stocks of the species. SYNS. *C. Boursierii* and *Cupressus Lawsoniana*. See Fig. 415. The varieties of this species are extremely numerous; the following are described as being the best, in Veitch's "Manual of Coniferæ":

C. L. albo-spica (white-speckled).* Terminal growth and tips of the branchlets creamy-white. Growth rapid, but less dense than the type.

C. L. albo-variegata (white-variegated).* Branchlets and foliage very deep green, profusely spotted and blotched with white. Of dwarf, compact, and conical habit.

C. L. argentea (silvery).* Branches longer and more slender than those of the type; foliage of almost silvery whiteness.

C. L. argenteo-variegata (silvery-variegated).* Many branchlets and leaves creamy-white, interspersed among the deep green foliage.

C. L. aureo-variegata (golden-variegated).* This differs from the type in having many of its branchlets bright yellow.

C. L. erecta-viridis (erect-green).* Habit fastigiate and tapering, with foliage of a lighter and brighter green than the type. It is very ornamental and distinct.

C. L. filiformis (thread-formed). Branches excessively elongated. Habit sub-pendulous.

C. L. gracilis pendula (gracefully pendulous).* Branches long, gracefully pendulous. A handsome lawn plant, of vigorous growth.

Chamæcyparis—*continued.*

C. L. intertexta (interwoven).* A variety more robust in all its parts, so that the ultimate branchlets appear more divaricate than in the type. Foliage with a peculiar glaucous hue.

C. L. lutea (yellow).* Whole of young growth light clear yellow. Of medium growth and compact habit.

C. L. nana (dwarf).* A diminutive variety, of slow growth; dense in habit, globose in outline, and deep green in colour.

C. L. n. alba (white). All the young growth yellowish-white; light green when mature.

C. L. n. glauca (grey)* resembles *nana*, but differs in its highly glaucous foliage.

C. leptoclada (slender-branchleted).* *l.* of two forms; primordial ones linear awl shaped, recurved, and light glaucous green; later ones scale-like, closely appressed to the branchlets, and deeper in colour. Branches close-set, short, sub-erect, much divided; branchlets flattened, fern-like, clustered towards the extremities of the branches and their many sub-divisions. *h.* 8ft. to 10ft. Japan. Habit pyramidal. SYN. *Retinospora leptoclada.*

FIG. 416. CONES AND LEAVES OF CHAMÆCYPARIS NUTKAENSIS.

C. nutkaensis (Nootka Sound).* *l.* small, closely imbricated, very acute, destitute of tubercles, rich dark green, slightly glaucous on the lower surface or shady side of the branches. Branches sub-erect; branchlets distichously arranged, with elegantly recurved extremities. *h.* 40ft. to 60ft. British Columbia, 1850. A very fine hardy species, with a nearly columnar form. SYN. *Thuopsis borealis.* See Fig. 416. The names of the varieties, *argenteo-variegata* (silvery-variegated), *aureo-variegata* (golden-variegated), *compacta* (compact), *glauca* (glaucous), *pendula* (pendulous), *variegata* (variegated), and *viridis* (green), sufficiently explain their respective characteristics.

C. obtusa (obtuse-leaved).* *l.* mostly in whorls of four, ovate-rhomboid, blunt, seldom pointed, decussate, all scale-formed, closely pressed along the branchlets, and adhering almost as far as the points, the lower part only being visible. Branches spreading; lateral ones in two rows, very dense, spreading out like a fan, and of a light green colour. *h.* 70ft. to 100ft. Japan. A tall evergreen tree. SYNS. *C. Kctaleeri* and *Retinospora obtusa.*

C. o. albo-picta (white-spotted). Many of the young shoots creamy-white, thus giving the plant a speckled and spotted appearance

C. o. aurea (golden).* This differs from the typical species in having a portion of the smaller spray and leaves of a golden colour, intermixed with the usual glossy green ones. Japan. A very desirable plant for small gardens, being quite hardy.

Chamæcyparis—*continued.*

C. o. compacta (compact). Stem much divided at the base. Branches crowded and more dense than in the type.

C. o. filicoides (fern-like).* *l.* small, oval, curved, thick in texture, and somewhat obtusely pointed, keeled on the back, thickly and rather loosely imbricated in four rows, and of a deep glossy green colour. Branches long, narrow, flat, regularly and thickly furnished on both sides with short branchlets of a deep green colour on the upper surface, and more or less glaucous beneath. Japan. A free-growing, quite hardy tree. SYN. *Retinospora filicoides.*

C. o. gracilis aurea (slender golden).* A very graceful form, with spreading branches, which are elongated at their extremities into slender, rather pendulous stems, furnished with short branchlets; young foliage light, clear yellow, but ultimately light green. Habit pyramidal.

C. o. lycopodioides (Club-moss-like).* *l.* variously shaped, and thickly arranged all round the shoots; those on the upper parts of the principal branchlets being more or less terete-pointed, or bluntly awl-shaped; those near the base of the principal shoots, and on the lesser spray, are more or less scale-formed, adpressed in opposite pairs, keeled on the back, oval-shaped, closely imbricated, all of a deep glossy green colour. Branches spreading, rather slender; branchlets numerous, short, linear. Japan, 1861. A fine evergreen tree. SYN. *Retinospora lycopodioides.*

C. o. nana (dwarf).* A very singular variety, forming a dwarf, cushion-shaped little bush, and seldom attaining a height of more than 1ft. or 2ft., but spreading out horizontally all round to more than double that distance. Japan. Quite hardy, and forms an interesting object for rockwork or miniature gardens. SYN. *Retinospora obtusa pygmæa.*

C. o. plumosa (feathery).* *l.* subulate or awl-shaped, sub-erect or spreading, acute. Branches numerous, sub-erect, thickly furnished with lateral shoots. *h.* 15ft. to 20ft. Japan. A dense-growing species, with a conical habit. The varieties of this are extremely beautiful dwarf shrubs, with flexible feathery branchlets.

C. o. p. albo-picta (white-spotted).* Many of the branchlets pure white, imparting a speckled appearance to the plant.

C. o. p. argentea (silvery).* Nearly the whole of the young growth creamy-white, becoming green when mature.

C. o. p. aurea (golden).* Young shoots and foliage of a light golden-yellow, gradually becoming deep green as the season advances. Very distinct and ornamental.

C. o. tetragona aurea (golden tetragonal).* *l.* short, scale-like, golden-yellow until the second year, when they assume a deep green colour. Branches horizontal, tufted at the extremities with short, undivided, tetragonal branchlets. Garden variety. SYN. *C. filicoides aurea.*

C. o. variegata (variegated). This only differs from the ordinary *C. obtusa* in the branchlets being more or less tinged with yellow.

The above list by no means completes the list of varieties of this very variable species. A large number of different forms may be selected from any seed bed, but the above-named are the best.

C. pisifera (Pea-bearing).* *l.* in four rows, decussate, all scale-formed on the adult plants; upper and lower ones ovate-lanceolate, tapering to a hard point, keeled on the back, and smooth; lateral ones almost sickle-shaped, equally long, acute-pointed, marked on the under side with two white glaucous bands. Branches numerous, thickly covered with branchlets. Japan. A much smaller and more slender tree than *C. obtusa.*

C. p. argenteo-variegata (silvery-variegated). This variety has its shoots variegated with white.

C. p. aurea (golden).* Terminal shoots of a golden hue. Japan, 1861.

C. p. filifera (thread-bearing). A synonym of *C. filifera.*

C. sphæroidea (spherical). White Cedar. *l.* very minute, closely imbricated, furnished with a small tubercle about the centre, light green, soon falling from the older branches. *cones* small globular bodies, about the size of peas. Branches spreading, much ramified; branchlets slender, not plaited. Trunk slender, tapering. *h.* 40ft. to 70ft. North America, 1736. SYN. *Cupressus thyoides.*

C. s. glauca (glaucous) A synonym of *C. s. kewensis.*

C. s. kewensis (Kew).* This variety differs from the species in being more compact, denser, and in having the branchlets and leaves of a silvery-glaucous colour. Very handsome. SYN. *C. s. glauca.*

C. s. variegata (variegated).* A handsome low or medium-sized tree, on which more than half the branchlets, with their foliage, are of a rich golden-yellow. It requires a damp, moist situation.

C. squarrosa (squarrose-leaved).* *l.* spiral, or in whorls, spreading, linear, sharp-pointed, decurrent, dense, smooth, and frequently bent or curved backwards, but somewhat scale-formed; those on the young plants are larger, linear, sharp-pointed, spreading, reflexed, bright glaucous-green above, and furnished with two white glaucous bands on the under side. Branches slender, gracefully curved towards the extremities; branchlets numerous, spreading in all directions, and thickly furnished with extended leaves. *h.* 4ft. to 6ft. Japan. A large bush or small tender tree. SYN. *Retinospora squarrosa.*

CHAMÆDOREA (from *chamai*, dwarf, and *dorea*, a gift; referring to the fruits of this palm being easily reached). SYNS. *Nunnezia*, *Nunnezharia*. ORD. *Palmeæ*. A rather large genus of stove palms, very extensively grown, and universally admired. Flowers dicœcious, appearing below the crown of the leaves. Fruit a berry, generally a little larger than a pea, with a fine polish, and of a bright colour. Leaves usually pinnatisect, but in a few species entire. Trunk ringed, polished, scarcely thicker than a man's finger. Plant unarmed. The species are invariably found growing under the shade of tall forest trees, and never in exposed situations. Essentials, therefore, to their successful culture in our stoves are shade and moisture. They succeed best in a compost of two parts spongy peat, one part loam, and one of sand; the whole well mixed together.

C. Arenbergiana (Arenberg's).* *l.* pinnate, 2ft. to 3ft. long; pinnæ 12in. long and 4in. broad, pendent, tapering to a tail-like point, bright green. Stem slender. Guatemala. SYNS. *C. latifrons* and *C. latifolia*.

C. atrovirens (dark green). A synonym of *C. Martiana*.

C. brevifrons (short-fronded). *l.* pinnate, arching, 12in. to 18in. in length; pinnæ sessile, 1in. to 2in. broad, tapering to a point, dark green. Stem slender. New Grenada. Very distinct.

C. desmoncoides (Desmoncus-like).* *l.* pinnate, 2ft. to 3ft. long; pinnæ 12in. long, 1in. to 1½in. broad, pendent, dark green. Stem slender and, as well as the petioles, glaucous. Mexico, 1846. An elegant species, which assumes a climbing habit after reaching a height of about 6ft. SYN. *C. scandens*.

C. eburnea (ivory). *l.* pinnate, broad, very bright green, which contrasts well with the ivory-white midrib which runs through the blade, and is apparent on both surfaces. Stems and petioles perfectly smooth and somewhat glaucous. Columbia, 1876.

C. elatior (taller). *l.* bright green, pinnate, with broad leaflets. South Mexico. This is perhaps the tallest-growing of all the Chamædoreas. It is suitable for growing up the pillars, and training along under the roof, of a large stove.

C. elegans (elegant).* *l.* pinnate, 2ft. to 4ft. long, gracefully pendent; pinnæ 6in. to 9in. long, 1in. broad in the centre, tapering towards each end, bright dark green; petioles somewhat carinate, sheathing at the base. Stem stout. *h.* 4ft. Mexico. SYNS. *C. Helleriana* and *Kunthia Deppeana*. (G. C. 1873, 508.)

C. Ernesti-Augusti (Ernest Augustus').* *fl.* spikes bright orange-scarlet, and extremely ornamental while they last. *l.* rich dark green, simple, 2ft. long, 1ft. broad, deeply bifid at the apex. New Grenada. SYN. *C. simplicifrons*. (B. M. 4831, 4837.)

C. formosa (beautiful).* *l.* pinnate; pinnæ very numerous, alternate, linear-lanceolate, 18in. long, and about 3in. wide, elongated to a thread-like point; petiole smooth, with two channels on the face. Tolima, South America, 1876. (G. C. 1876, 724.)

C. fragrans (fragrant). *fl.* spikes in long drooping panicles. *l.* bright green, pinnate, gracefully recurved; pinnæ numerous, narrow, acuminate. Mexico, 1850. SYN. *Morenia fragrans*. (B. M. 5492.)

C. geonomiformis (Geonoma-formed).* *l.* entire, bifid at the apex, 6in. to 12in. in length, 4in. to 5in. in breadth, dark green. Stem slender. *h.* 4ft. Guatemala, 1856. A very beautiful dwarf-growing species. SYN. *Nunnezharia geonomiformis*. (B. M. 6088.)

C. glaucifolia (glaucous-leaved).* *l.* long, pinnate; pinnæ narrow, long, and slender, dark green, suffused with a glaucous hue. Guatemala. *h.* 20ft. An elegant slender-growing species, and one of the best for decorative purposes.

C. graminifolia (Grass-leaved).* *l.* pinnate, 2ft. to 4ft. long, rich dark glaucous green, gracefully arched; pinnæ upwards of 1ft. long, about ½in. broad. Stem reed-like. Costa Rica. This is described as probably the most graceful species of the genus, the whole plant having the appearance of a plume of feathers.

C. Helleriana (Heller's). A synonym of *C. elegans*.

C. latifolia (broad-leaved). A synonym of *C. Arenbergiana*.

C. latifrons (broad-fronded). A synonym of *C. Arenbergiana*.

C. Lindeniana (Linden's). *l.* pinnate, spreading; pinnæ broadly oblong, or oblong-lanceolate, falcate, long acuminate; primary and secondary nerves eleven to thirteen. Mexico.

C. lunata (crescent-shaped). A synonym of *C. oblongata*.

C. macrospadix (large-spadix). *l.* pinnate, upwards of 4ft. long, gracefully curved; pinnæ 12in. to 18in. long by 2in. broad, dark green. Stem somewhat stout. Costa Rica. A very handsome plant, and one of the largest-growing species in the present genus.

C. Martiana (Martius's). *l.* pinnate, spreading; pinnæ pendent, 6in. to 8in. long, hardly 1in. broad, deep green. Chipias. A very useful dwarf spreading species, producing many little dichotomous stems. SYN. *C. atrovirens*.

C. mexicana (Mexican). A synonym of *C. Sartorii*.

Chamædorea—*continued*.

C. microphylla (small-leaved).* *l.* pinnate, 6in. to 10in. long, prettily arched; pinnæ ovate-cordate, about 4in. long and 1½in. wide, very deep green. Stem slender, dark green, mottled with white dots. Tropical America. An elegant pigmy palm, The branching flower-spikes are produced from below the crown of leaves when the stem is only about 2in. high.

C. oblongata (oblong). *l.* pinnate, long, dark green; pinnæ somewhat lunate. Stem moderately stout. Tropical America. An elegant species, well adapted for decorative purposes. SYN. *C. lunata*.

FIG. 417. CHAMÆDOREA SARTORII

C. Sartorii (Sartor's).* *fl.* spikes bright red. *l.* longer, more numerous, and pinnules broader, than in *C. elegans*, which species it otherwise much resembles. Mexico. A very handsome species. SYNS. *C. mexicana* and *Morenia oblongata conferta*. See Fig. 417.

C. scandens (climbing). A synonym of *C. desmoncoides*.

C. simplicifrons (simple-fronded). A synonym of *C. Ernesti-Augusti*.

C. tenella (slender). *fl.* yellow, spiked, ebracteate and ebracteolate; male ⅛in. long. *l.* shortly petioled, 4in. to 5in. long by 3in. broad, spreading, convex, remotely obtusely serrate, bifid for one-third of their length; nerves eight or nine pairs. Spadices as long as the palm, drooping, slender, unbranched; males longest, with most numerous and much the largest flowers; rachis slender, but stouter than the peduncle, yellowish; peduncles very slender; spathes membranous. One of the most diminutive of all palms. Mexico. (B. M. 6584.)

C. Tepejilote (Tepejilote, native name). *l.* pinnate; pinnæ rich deep green, pendent. Stem slender. *h.* 10ft. Mexico, 1860. A very graceful species, but somewhat rare in cultivation. (B. M. 6030.)

C. Warscewiczii (Warscewicz's). *l.* beautifully curved, long, pinnate; pinnæ broad, sessile, tapering to a point; terminal pinnæ broad, bifid. Guatemala.

C. Wendlandi (Wendland's).* *l.* pinnate; pinnæ 1ft. long, upwards of 2in. broad, sessile; apex acuminate, rich shining green. Stem slender. Mexico. This is one of the best for decorative purposes.

CHAMÆLAUCIACEÆ. A tribe of *Myrtaceæ*.

CHAMÆLAUCIUM (from *chamaileuke*, a dwarf white Poplar, because its healthy stems are miniatures of that tree; this meaning is not very clear). ORD. *Myrtaceæ*. A very ornamental little greenhouse evergreen shrub.

Chamælaucium—*continued.*

Flowers white, axillary, subtended by two concave bracteoles, which fall off in a calyptra from the young bud. Leaves opposite, crowded, linear, triquetrous. For culture and propagation, *see* **Calythrix.**

C. ciliatum (hair-fringed). *fl.*, tube of calyx striated, glabrous, with the lobes roundish and ciliated. May. *h.* 2ft. West Australia, 1825.

CHAMÆLEDON PROCUMBENS. *See* **Loiseleuria.**

CHAMÆPEUCE (from *chamai*, dwarf, and *peuke*, a Pine; resemblance). ORD. *Compositæ*. This genus is now usually included under *Cnicus*. Nearly hardy herbaceous plants, differing from *Cnicus* proper in the covering of the achenes being hardened, not membranaceous; and from *Carduus* in the pappus being feathery, not simple. Flower-heads from 1in. to 2in. in diameter, generally arranged in corymbs or long leafy racemes. Leaves usually lanceolate, with very spiny margins. Of the entire genus, the only two worth much attention are *C. Casabonæ* and *C. diacantha*. Both these are effective for sub-tropical gardening and carpet bedding, growing in compact rosette-like patches, and not producing stems or flower-heads until the second year. Propagated by seeds, sown in gentle heat, in February, and also in September, in which latter case the young seedlings should be potted up and kept indoors throughout the winter months.

C. Casabonæ (Casabona's). Fish-bone Thistle. *fl.-heads* pale purple. Summer. *l.* deep green, veined with white, spiny. *h.* 2ft. to 3ft. South Europe, 1714.

C. diacantha (two-spined). *fl.-heads* purplish, in dense, spike-like clusters. Summer. *l.* shining green, marked with silvery lines; spines ivory-white. *h.* 2ft. to 3ft. Syria, 1800.

C. stricta (upright). *fl.-heads* purple. Summer. *l.* veined with white. *h.* 2ft. South Europe, 1820. A neat and dwarf-growing species, sometimes seen in gardens.

CHAMÆRANTHEMUM (from *chamai*, dwarf, and *anthos*, a flower). ORD. *Acanthaceæ*. Stove plants, thriving best in a well-drained peat and loam compost. Cuttings of young shoots will root in spring, if planted in sand and placed in heat.

C. Beyrichii variegatum (Beyrich's variegated). *fl.* white. *l.* rather large, oval, marked with a broad, irregularly-margined greyish band along the centre. Brazil, 1866. (B. M. 5557.)

C. igneum (fiery). *fl.* yellow. *l.* with red veins. Peru. (R. G. 598.)

C. pictum (painted).* *l.* sessile, obovate-oblong, tapering at the base and shortly acuminate at the apex; colour green, with orange edges, and a large, irregular, central silvery blotch; young leaves covered with short, stiff, appressed orange-coloured hairs. Brazil, 1878.

CHAMÆRHODOS (from *chamai*, on the ground, and *rodon*, a rose; dwarf rose). ORD. *Rosaceæ*. Pretty hardy herbaceous perennials, allied to *Potentilla*, but difficult to preserve through the winter, owing to excessive damp. Flowers white or purple, erect, solitary or paniculate, small. Leaves alternate, three-parted; divisions again split up into linear segments. They should be grown under a well-drained ledge of the rockery, or in pots, in a mixture of sand, peat, and loam; and should be placed on a dry shelf, in a cold frame, in winter, at which time they must be but sparingly watered, if at all. Increased by seeds, which should be sown as soon as ripe, in pots, in a cold frame.

C. erectus (erect). *fl.* white; petals about equal in length to the calyx. July to August. *l.* multifid; segments linear. Stem straight, beset with glandular hairs, panicled. *h.* 6in. Rocky Mountains, &c., 1824.

C. grandiflora (large-flowered). *fl.* white: petals twice the length of the calyx. June. *l.* divided into numerous linear segments, pubescent. Stems numerous, erect, leafy. *h.* 6in. Dahuria, 1798.

CHAMÆROPS (from *chamai*, on the ground, and *rhops*, a bush, alluding to the low growth of the plants). ORD. *Palmæ*. A genus comprising two species of ornamental greenhouse palms. The petioles are furnished with prickles, the blade is fan-shaped, the inflorescence axillary and polygamo-dicecious, whilst the fruits are generally

Chamærops—*continued.*

one-seeded, and resemble Olives in appearance. *C. humilis* is frequently employed in sub-tropical gardening, for which purpose it should have a situation sheltered from strong winds. The species are of very easy culture in a compost of rich strong loam, to which is added a small portion of vegetable mould and sand; perfect drainage, and copious supplies of water throughout the summer, are most essential to success. Propagation may be effected by suckers, which generally appear in considerable quantities; or by seeds. *See also* **Rhapidophyllum, Sabal,** and **Trachycarpus.**

C. humilis (dwarf).* *l.* glaucous on both surfaces, divided about one-third their length into narrow, erect segments; petioles glaucous, 3ft. to 4ft. in length, armed at the edges with stout spines. *h.* 20ft. (usually about 4ft. to 6ft. in English gardens). South Europe and North Africa, 1731. In its native home, this species is seen to most perfection. It is very fine, and well worthy of greatly extended cultivation.

C. macrocarpa (large-fruited).* A robust growing form, with a stout stem and larger fruit than the foregoing species. It has a hardy constitution, and is an excellent plant for decorative purposes. Northern Africa.

CHAMISSOA (commemorative of the naturalist, Louis Charles Albert von Chamisso, born at Boncourt in Champagne, in 1781; died at Berlin in 1838). ORD. *Amarantaceæ*. A genus containing some six or eight species, from tropical and sub-tropical South America. Some of the species now referred here were formerly placed under *Achyranthes*, a genus of about a dozen species, of merely botanical interest. Chamissoas thrive well in loam and leaf mould. They may be readily increased by seeds; or by cuttings, inserted in sand, in bottom heat. The only species worth mentioning here is the following:

C. altissima (tallest). *fl.* whitish, in branched terminal and axillary panicles. *l.* stalked, ovate-lanceolate, acuminate, hairy beneath. A tall herbaceous greenhouse or stove perennial.

CHAMOMILE, or **CAMOMILE** (*Anthemis nobilis*). A perennial herbaceous plant, at one time—and still to a considerable extent—in repute as a medicinal agent. It has both tonic and febrifugal properties, and thrives on any light rich soil, if fairly dry. The plants may be raised from seed, but the quickest way of propagation is by dividing the roots in spring, and replanting in small patches, about 9in. apart. They must be watered when dry, until established, and kept clear of weeds. The flowers, which alone are used, should be picked as soon as fully expanded, in fine, sunny weather, placed thinly in a shady place to dry, and turned over occasionally. As the blooming season lasts for some time, several pickings may be made. There are two varieties—the Single and the Double-flowered. The latter produces the greater bulk of flowers, and is, consequently, most cultivated. The flowers of the Single variety are, however, of the best medicinal quality.

FIG. 418. THE CHAMPIGNON (MARASMIUS ORREADES).

CHAMPIGNON (*Marasmius oreades*). This has long been known as an esculent mushroom, and it is greatly esteemed throughout France. It is sometimes described in books as the Fairy-ring Mushroom, but several others have an equal claim to that title. It may be readily distinguished from the closely allied poisonous species, *M. urens*, with which it sometimes grows, in having the stem quite bare, and in its less crowded gills. See Fig. 418.

CHANDELIER-TREE. *See* **Pandanus candelabrum.**

CHANNELLED. Hollowed out, like a gutter.

CHANTARELLE (*Cantharellus cibarius*). This is one of the most distinct, best-known, and most generally appreciated of fungi. It is almost always a woodland species, growing either singly or in patches, and appearing from the latter end of August until the end of October or the beginning of November. The stem, which is short and thick, expands gradually into the pileus, which is smooth and funnel-shaped. The gills are thick and branched, and, owing to the shape of the pileus, seem to extend for some distance down the stem, having rather the appearance of folds (see Fig. 419). The Chantarelle is throughout of a deep rich yellow colour, and possesses a

FIG. 419. THE CHANTARELLE (CANTHARELLUS CIBARIUS).

peculiar but pleasant smell. This species seems most abundant in the southern parts of the country, being found in large quantities in various parts of Kent, Surrey, Buckinghamshire, Berkshire, Essex, and the neighbouring counties. In France, the Chantarelle enjoys a general and well-deserved popularity. It is employed in fricassées, or cooked with butter, lard, and oil; vinegar, salt and onions being added at discretion. It is sometimes preserved in vinegar, with pepper, salt, and garlic; or simply dried, in which case it is employed as a seasoning for ragouts.

CHAPTALIA (named after M. Chaptal, a celebrated French chemist, 1756-1831). ORD. *Compositæ*. A genus comprising about eighteen species, confined to the New World; perhaps the only one in cultivation being that mentioned below. It is an ornamental hardy herbaceous

Chaptalia—*continued.*

perennial, easily grown in a light sandy soil. Propagated by divisions of the roots, in early spring.

C. tomentosa (tomentose).* *fl.-heads* white; pappus capillary; receptacle naked; ray-florets in a double row, deformed; scape naked, one-headed; head nodding. May. *l.* ovate-oblong, entire, silvery beneath. *h.* 6in. North America, 1806. (B. M. 2257.)

CHARCOAL is the main solidifying element of organic nature, and is present in large quantities in all organised structures. It is a pure form of Carbon. The powers of Charcoal in absorbing effluvia and the greater number of gases and vapours is well known, and as a filter Charcoal Powder has long been used to deprive water of its numerous organic impurities. As a manure, Charcoal is of especial value. It may be mixed, either crushed or in lumps, with the soil of pot plants, in the proportion of one part Charcoal to sixteen parts of earth. Besides rendering the soil porous and facilitating drainage, Charcoal is one of the most indestructible substances known, and has the property of absorbing carbonic acid and other gases, yielding these up to plants as required for nourishment. It may be applied to the most delicate subject without danger. Pieces, the size of walnuts, should be put in Hyacinth glasses, in order to keep the water pure during the growth of the Hyacinth. It is often thought necessary to add some to water in which grapes are placed when cut, but water will keep good without it so long as the Vine shoot is inserted. The roots of orchids cling to Charcoal in many cases much better than to anything else.

CHARIEIS (from *charieis*, elegant; alluding to the beauty of the flowers). ORD. *Compositæ*. An ornamental hardy annual, with a very compact habit of growth, and free-blooming qualities. Involucre simple; leaflets keeled; receptacle naked, convex. Seeds may be sown out of doors in ordinary soil, about the middle of April; or, if an early display is desired, they may be sown on a hotbed in March, and transplanted out when large enough to handle.

C. heterophylla (various-leaved). *fl.-heads*, ray-florets blue, disk blue or yellow; peduncle long, one-headed, glandular. June. *l.*, lower ones opposite; upper alternate, oblong-lanceolate. *h.* 1ft. South Africa, 1819. SYN. *Kaulfussia amelloides*. (B. R. 490.)

CHARLOCK. *See* **Sinapis arvensis.**

CHASCANUM (from *chaino*, or *chaskaino*, to gape; in allusion to the form of the calyx). ORD. *Verbenaceæ*. All the plants formerly referred here are now included under genus *Bouchea*.

CHAVICA. *See* **Piper.**

CHEESE RENNET. *See* **Galium verum.**

CHEILANTHES (from *cheilos*, a lip, and *anthos*, a flower; in reference to the form of the indusium). ORD. *Filices*. The following names, formerly looked upon as representing distinct genera, are now merely regarded as sectional ones of the genus *Cheilanthes—Adiantopsis, Aleuritopteris*, and *Physapteris*. A large genus of hardy, greenhouse, and stove ferns. Sori terminal, or nearly so, on the veins, at first small, sub-globose, afterwards more or less confluent. Involucre formed from changed reflexed margin, roundish and distinct, or more or less confluent, but not quite continuous. For general culture, *see* **Ferns.**

C. argentea (silvery).* *sti.* densely tufted, 3in. to 6in. long, wiry. *fronds* 3in. to 4in. long, 2in. broad, deltoid, bi- or tripinnatifid; lower pinnæ much the largest, cut down nearly to the rachis; lowest pinnules sometimes ½in. long; lower surface thickly covered with white ceraceous powder. *sori* numerous, very small, marginal. Siberia to India, &c. Greenhouse species.

C. Bradburii (Bradbury's). A synonym of *C. tomentosa*.

C. capensis (Cape).* *sti.* tufted, erect, 4in. to 6in. long. *fronds* 4in. to 5in. long, 3in. to 4in. broad, bipinnatifid; lower pinnæ much the largest; pinnules on the lower side larger than the

Cheilanthes—*continued.*

others, ovate, bluntish, cut down to the rachis into oblong, blunt, nearly entire segments. *sori* small, placed all round the edge of the segments. Cape of Good Hope. (H. S. F. ii., 77.)

FIG. 420. CHEILANTHES CLEVELANDI.

C. Clevelandi (Cleveland's).* *sti.* tufted, erect, scaly. *fronds* 4in. to 12in. long, ovate-lanceolate, tri- or (rarely) quadripinnate; ultimate divisions of pinnæ nearly round, sub-lenticular, small, deep green above, covered with fine white scales beneath. North-west America. Hardy, or nearly so. See Fig. 420.

C. Eatoni (Eaton's).* *sti.* tufted, 3in. to 6in. long, wiry, densely scaly. *fronds* 3in. to 8in. long, 1½in. to 2in. broad, ovate-lanceolate, **tripinnatifid; lower pinnules distant, alternate or opposite,** deltoid; pinnules linear-oblong, pinnatifid; upper surface densely clothed with white woolly tomentum, lower also densely matted, **the margin of the segments incurved. Greenhouse. Western United States, &c.**

C. elegans (elegant). **A synonym of *C. myriophylla elegans.***

C. farinosa (mealy).* *sti.* densely tufted, 3in. to 6in. long. *fronds* 3in. to 12in. long, 3in. to 6in. broad, lanceolate or deltoid, bi-tripinnatifid; pinnæ numerous, opposite, lower ones mostly largest; lowest pinnules longer than the others, deeply sinuato-pinnatifid; under surface densely coated with pure white powder. *sori* small, brown, placed in a continuous line along the edges. **Tropics of both hemispheres. Stove species.** (B. M. 4765.)

C. Fendleri (Fendler's).* ***sti.* scattered, 2in. to 4in. long, wiry.** *fronds* 3in. to 4in. long, 1in. to 1½in. broad, ovate-lanceolate, tri-pinnatifid; pinnæ lanceolate-deltoid, about ¾in. long; pinnules **linear-oblong, cut into small oblong segments**; rachis densely scaly. *sori* copious, marginal. Rocky Mountains. Greenhouse species. (H. S. F. ii., 107.)

C. flexuosa (flexuose). ***sti.* tufted, 2in. to 4in. long.** *fronds* **4in. to 6in. long, deltoid, tripinnate; pinnæ and pinnules lanceolate,** short-stalked, lowest largest; segments flattish, ovate-oblong, blunt, sessile, one to one and a half lines broad. *sori* **six to eight to largest segment. Tropical America. Stove species.**

C. fragrans (fragrant).* *sti.* cæspitose, wiry, 1in. to 3in. long, densely scaly. *fronds* 2in. to 3in. long, about 1in. broad, ovate-acuminate, bi- or **tripinnatifid; pinnæ opposite,** deltoid, cut down to the rachis below into several sinuato-pinnatifid linear-oblong **lobes.** *sori* **small, copious. South Europe, &c., 1778.** Half hardy. SYNS. ***C. odora* and *C. suaveolens.***

C. frigida (frigid). **A synonym of *C. lendigera.***

C. gracilis (slender). **A synonym of *C. lanuginosa.***

C. gracillima (most slender).* ***sti.* densely tufted, 2in. to 6in.** long, wiry, slender. *fronds* 3in. to 4in. long, 1in. broad, narrowly ovate-lanceolate, bi- or **tripinnatifid; lower pinnæ opposite, lanceolate-**deltoid, cut down to the rachis into several linear-oblong segments on each side; lower surface densely matted with pale brown woolly tomentum; margin of the segments much incurved. *sori* copious, marginal. California, &c. Greenhouse or frame species.

C. hirta (hairy). *sti.* tufted, 2in. to 4in. long, strong, erect, densely hairy. *fronds* 4in. to 12in. long, 2in. to 3in. broad, ovate-lanceolate, **tripinnatifid**; pinnæ opposite, spreading from the main rachis at right angles, lanceolate, and cut down to the rachis into numerous oblong pinnules, which are about ¼in. long; margin of the segments much incurved. *sori* copious. **Cape of Good Hope, 1806. Greenhouse species. (H. S. F. ii., 101 b.)**

Cheilanthes—*continued.*

C. lanuginosa (woolly).* *sti.* densely tufted, erect, wiry. *fronds* 4in. to 8in. long, 1in. to 1½in. broad, ovate-lanceolate, bipinnatifid; pinnæ in opposite pairs, the lower ones deltoid; pinnules linear-oblong, with numerous small roundish segments; lower surface densely tomentose; margin of the segments much incurved. North America. Hardy. SYN. *C. gracilis.*

C. lendigera (maggot-bearing).* *sti.* 3in. to 12in. long, strong, erect, tomentose. *fronds* 4in. to 12in. long, 2in. to 4in. broad, lanceolate, tri- or quadripinnatifid; pinnæ numerous, the lowest opposite, lanceolate; pinnules numerous, linear oblong, cut down to the rachis into numerous distinct convex segments, half line or less each way. *sori* sub-continuous. Mexico, &c. Stove species. SYN. *C. frigida.* (H. S. F. ii., 104.)

C. Lindheimeri (Lindheimer's).* *sti.* scattered, 3in. to 6in. long, wiry. *fronds* 3in. to 6in. long, 1½in. to 2in. broad, ovate-lanceolate, tripinnatifid; pinnæ numerous, contiguous, the lowest about 1in. long, ⅜in. broad; pinnules numerous, linear-oblong; rachis densely scaly above; upper surface woolly, lower densely scaly; margin of the segments much incurved. *sori* copious, marginal. **Texas and New Mexico. Greenhouse species. (H. S. F. ii., 107.)**

C. microphylla (small-leaved).* *sti.* 2in. to 6in. long, wiry. *fronds* 3in. to 9in. long, 2in. to 3in. broad, ovate-lanceolate, bi- or tripinnatifid; pinnæ in numerous nearly opposite pairs, the lowest 1in. to 2in. long; pinnules linear-oblong, entire or sub-deltoid, and cut down to the rachis below. *sori* roundish or elongated. Tropical America. Stove species. There are numerous varieties and forms of this, one of which is *C. micromera*, with numerous close-spreading pinnæ; pinnules ovate-oblong, entire or nearly so. (H. S. F. ii., 99.)

C. multifida (much-cut). *sti.* tufted, 3in. to 9in. long, strong, erect. *fronds* 3in. to 12in. long, 2in. to 8in. broad, ovate-lanceolate or deltoid, tri- or quadripinnatifid; lower pinnules opposite, remote, deltoid, 2in. to 6in. long; ultimate divisions linear-oblong, deeply lobed, and the margin in the fertile plant much recurved. *sori* terminal on the lobes, small, roundish, slightly confluent. Cape of Good Hope, &c. Greenhouse species. (H. G. F. 39.)

C. myriophylla (myriad-leaved). *sti.* densely tufted, wiry, erect, clothed with pale, woolly tomentum. *fronds* 4in. to 6in. long, and 1½in. to 2in. broad, ovate-lanceolate in outline, tri- or quadripinnatifid; pinnæ lanceolate-deltoid, with linear-oblong pinnules on both sides; ultimate segments very small, roundish, and bead-like, of a bright green colour above, densely matted beneath, with a sub-coriaceous texture. Tropical and warm temperate America. Stove or greenhouse species. The variety *elegans* (SYN. *C. elegans*) has obovate-pyriform segments, usually tapering into a distinct stalk. Found in the same localities.

C. mysurensis (Mysuran).* *sti.* densely tufted, very short, wiry. *fronds* 3in. to 12in. long, 1½in. to 3in. broad, ovate-lanceolate, tripinnatifid; pinnæ numerous, the lowest opposite, about 1in. long, lanceolate-deltoid, cut down to the rachis into numerous linear-oblong, pinnatifid pinnules. *sori* small, roundish, distinct, or slightly confluent. Tropical Hindostan. Stove species. (H. S. F. ii., 100.) *C. fragilis* is said to be very doubtfully distinct from the foregoing species, but it is a larger plant.

C. odora (sweet). **A synonym of *C. fragrans.***

C. Preissiana (Preiss's). A synonym of *C. Sieberi.*

C. pteroides (Pteris-like). *sti.* 6in. to 12in. long, strong, erect. *fronds* 12in. to 18in. long, 6in. to 9in. broad, deltoid, tripinnate; upper part simply pinnate; lower with several opposite pairs of wiry erecto-patent branches, growing gradually larger downwards; segments oblong, entire. *sori* small, roundish, distinct but contiguous. Cape of Good Hope, &c., 1775. Greenhouse species. (H. S. F. ii., 101.)

C. radiata (rayed).* ***sti.* tufted,** 12in. to 18in. long, strong, erect, wiry; pinnæ six to nine, all radiating from a common centre, like the spokes of a wheel, with a whorl of bract-like segments at the axis, the longest 6in. to 9in. long, about 1in. broad; pinnules numerous, close, ¼in. long, unequal-sided, truncate at the base. *sori* small, very numerous, placed along both margins of the entire pinnules. **Tropical America. Stove species.** (H. S. F. ii., 91.)

C. rufa (reddish).* ***sti.* tufted, 1in. to 2in. long,** densely tomentose. *fronds* **6in. to 9in. long, 2in. to 3in. broad,** ovate-lanceolate, bi-pinnatifid; pinnæ opposite, the lower ones with 1in. to 2in. between them, oblong; pinnules on the lower side the largest, ¼in. to ½in. long, linear-oblong; under surface coated with white powder. *sori* copious, marginal, roundish, small. North of Hindostan. Stove species. (H. S. F. ii., 99.)

C. Sieberi (Sieber's).* *sti.* densely tufted, 3in. to 6in. long, wiry. *fronds* 3in. to 6in. long, 1in. to 1½in. broad, oblong-acuminate, tripinnatifid; pinnæ in pairs, the lowest often distant, deltoid, with several opposite, oblong-deltoid pinnules, which are cut down to the rachis in the lower part; involucre small, narrow, pale brown, roundish, and separate or combined. Australia, &c. Greenhouse species. SYN. *C. Preissiana.* (H. S. F. ii., 97.)

C. suaveolens (sweet-smelling). **A synonym of *C. fragrans.***

C. tenuifolia (slender-leaved). ***sti.* not tufted,** 4in. to 8in. long, wiry, flexuose. *fronds* **4in. to 8in. long, 3in. to 4in. broad,** deltoid, tripinnatifid; pinnæ in numerous opposite pairs, deltoid; pinnules **on the lower side the largest,** the lowest 1in. long, cut into sinuato-pinnatifid segments. *sori* **roundish or sub-continuous. Tropics, southern hemisphere. Stove species. (H. S. F. ii., 97.)**

Cheilanthes—*continued.*

C. tomentosa (tomentose).* *sti.* tufted, 4in. to 6in. long, strong, erect, densely tomentose. *fronds* 6in. to 12in. long, 2in. to 3in. broad, ovate-lanceolate, tripinnatifid; lower pinnules distant, opposite, 1in. to 1½in. long, deltoid; pinnules linear-oblong, cut into numerous small oblong segments; rachis densely woolly; upper surface grey-green, pubescent; lower densely matted. Mexico. Greenhouse species. SYN. *C. Bradburii.* (H. S. F. ii., 109 b.)

C. vestita (clothed).* *sti.* tufted, 2in. to 4in. long, wiry, slightly tomentose. *fronds* 4in. to 8in. long, 1½in. to 2in. broad, ovate-lanceolate, tripinnatifid; lower pinnæ distant, opposite, about ½in. long, cut down to the rachis into several oblong pinnules on each side. *sori* copious. North America, 1812. Nearly hardy.

C. viscosa (clammy).* *sti.* tufted, 4in. to 6in. long, strong, erect, pubescent. *fronds* 4in. to 6in. each way, deltoid, tri- or quadri-pinnatifid; pinnæ in pairs, the lowest much the largest; pinnules of the lower side larger than the others, lanceolate, with narrow linear-oblong segments, which are again cut down to the rachis. *sori* more or less confluent. New Mexico, &c., 1841. Stove or greenhouse species. (H. S. F. ii., 93.)

C. Wrightii (Wright's).* *sti.* 2in. to 4in. long, strong, wiry. *fronds* 2in. to 3in. long, 1in. to 1½in. broad, ovate-lanceolate, tripinnatifid; pinnæ in several opposite pairs, the lowest about 1in. long; pinnules cut about half-way down. *sori* copious, the margin of the fertile fronds much incurved. Texas. Greenhouse species. (H. S. F. ii., 90.)

CHEIMATOBIA BRUMATA. *See* **Winter Moth.**

FIG. 421. FLOWERING BRANCH OF CHEIRANTHUS CHEIRI.

CHEIRANTHUS (from *cheiri* or *kheyry*, the Arabic name of a plant with very red sweet-scented flowers, and *anthos*, a flower; or perhaps from *cheir*, the hand, and *anthos*, a flower—hand-flower). Wallflower. ORD. *Cruciferæ.* Biennial, perennial, or suffruticose herbs. Racemes elongated; pedicels bractless, filiform; siliqua long and narrow. Leaves oblong or lanceolate, entire or toothed. The hardy shrubby varieties of the common sort should be increased by young cuttings, which will soon root outside, if covered with a hand glass. The half-hardy kinds will thrive well in a light rich soil; young cuttings will strike freely under a hand glass, in a cold frame, and may be kept there, or in a cool house, through the winter. The herbaceous perennials may also be increased by young cuttings

Cheiranthus—*continued.*

or seeds. The biennial and annual kinds are propagated by seeds, sown in the open border, from March to July. All the species thrive well if planted on the rockwork, and even the tenderer sorts, thus treated, will survive mild winters. The common Wallflowers—varieties of *C. Cheiri*—will thrive almost anywhere.

C. asper (rough). *fl.* yellow, rather large, in dense corymbs. June. *l.* linear-lanceolate, more or less toothed or entire, tapering much to the base, and are, as well as the stem, covered with close-pressed, two-parted hairs. Stem branched. *h.* 1ft. California, &c., 1826. Half-hardy. SYN. *C. capitatus.*

C. capitatus (headed). A synonym of *C. asper.*

C. Cheiri (Cheiri).* Common Wallflower. *fl.* greatly varying in size and colour, but all fragrant. Early spring and summer. *l.* lanceolate, quite entire, covered with two-parted pressed hairs, or smooth. *h.* 1ft. to 2ft. Europe, 1573. See Fig. 421. Of this universally grown and admired spring perennial there are a great number of varieties, both double and single. The Double German strains are particularly good; their habit is very dwarf and compact. The following sorts are worth growing. *Double varieties*: Yellow, light brown, dark brown. *Single varieties*: BLOOD RED, HARBINGER, BELVOIR CASTLE, and GOLDEN TOM THUMB.

FIG. 422. FLOWERING BRANCHES OF CHEIRANTHUS CHEIRI FLORE-PLENO.

C. C. flore-pleno (double-flowered). *fl.* varying considerably in colour, from clear yellow to very dark red. Seeds of a good strain will yield a large proportion of double flowers. See Fig. 422.

C. Marshalli (Marshall's).* *fl.* deep clear orange, nearly ¾in. across, very freely produced. Spring. *l.*, lower ones more or less spathulate, crowded; upper ones narrowly lanceolate. *h.* 1ft. to 1½ft. Supposed hybrid.

C. Menziesii (Menzies'). *fl.* bright purple. Spring. *l.* radical, oblong-lanceolate, 2in. to 4in. long, densely covered with a short stellate pubescence. *h.* 6in. to 8in. California. A half-hardy perennial, with a thick, long, persistent branching root-stock.

C. mutabilis (changing).* *fl.* at first cream-coloured, afterwards becoming purple, or striped. March. *l.* linear, lanceolate, pointed, finely serrated, somewhat downy, with two-parted hairs. Stem frutescent, branched. *h.* 2ft. to 3ft. Madeira, 1777. Half-hardy shrub. (B. M. 195.)

C. ochroleucus. *See* **Erysimum ochroleucum.**

C. scoparius (broom). *fl.* white, then purple. May. *l.* linear-lanceolate, acuminated, entire, rather pubescent, with appressed two-parted hairs. Stems shrubby, branched. *h.* 2ft. to 3ft. Teneriffe, 1812. Half-hardy. (B. R. 219.)

C. semperflorens (ever-flowering). *fl.* yellow or white; pedicels one-half shorter than the calyx. January to December. *l.* linear-lanceolate, quite entire, roughish. Stem shrubby, branched. *h.* 1ft. to 2ft. Marocco, 1815. Half-hardy.

CHEIROSTEMON (from *cheir*, the hand, and *stemon*, a stamen; the stamens are five in number, the filaments are united at the base, and are recurved at their top, which gives them the appearance of a hand). Hand-plant. ORD. *Malvaceæ.* A fine cool-house tree, succeeding well in a

Cheirostemon—*continued.*

mixture of turfy loam and peat, or any light rich soil. Cuttings of rather firm shoots will root in sandy peat, if placed under a hand glass, in heat.

C. platanoides (Plane-tree-like). *fl.* solitary, hoary-tomentose; petals absent; calyx somewhat campanulate, furnished with three bracteoles on the outside at the base. *l.* five and six-lobed, palmate-nerved. *h.* 60ft. Mexico, 1820. (B. M. 5135.)

CHEIROSTYLIS (from *cheir*, the hand, and *stylos*, a column; the projecting column is ridged on the back, having somewhat the appearance of the fingers of a hand). ORD. *Orchideæ*. A genus of somewhat interesting, but inconspicuous, stove orchids, in general aspect like a small *Goodyera*, but differing from that genus in several respects. They require damp heat, and a mixture of three parts chopped sphagnum and one part well-decayed leaf mould. Increased by the creeping stems.

C. marmorata (marble-leaved).* *fl.* white, with a reddish calyx; raceme dark purple, long, downy. September. *l.* deep reddish olive-green, with a velvety surface, traversed by fine golden veins, which disappear to a great extent when the leaves become old. *h.* 3in. India, 1849. (F. d. S. 4, 370.)

C. parvifolia (small-leaved). *fl.* white. September. *h.* 3in. Ceylon, 1837.

CHELIDONIUM (from *Chelidonion*, the Greek name used by Dioscorides, from *chelidon*, a swallow; it is said that the plant flowers at the time of the arrival of swallows, and dries up at their departure). Celandine; Swallow-wort. ORD. *Papaveraceæ*. The only species is a perennial herb, abounding in an acrid saffron-coloured juice. It forms an excellent subject for naturalising in shrubberies, and in the wild garden. Its cultivation is very simple in any common soil, but it grows most freely in damp shady situations. Increased by seeds, or by divisions at the roots. In a wild state, it is distributed over the temperate parts of Europe and Asia.

C. japonicum. *See* **Stylophorum japonicum.**

C. majus (large). *fl.* yellow, three to six together in a loose umbel; peduncles hairy, with a roundish bract at the base. Spring and summer. *l.* pinnate, thin; leaflets roundish, coarsely toothed. *h.* 1ft. to 2ft. Great Britain. (Sy. En. B. 67.) There is a pretty variety (*laciniata*) with segments of the leaves cut into many linear, acute, laciniated lobes, and the petals also cut; also a double-flowered form.

FIG. 423. CHELONE LYONI, showing Habit, and Side View (1) and Front View (2) of Single Flower.

CHELONE (from *chelone*, a tortoise: the back of the upper lip of the corolla is compared to a tortoise). Turtle-head. ORD. *Scrophularineæ*. Very handsome herbaceous

Chelone—*continued.*

plants, allied to *Pentstemon*. Flowers imbricately spiked, terminal; corolla ringent, ventricose; lower lip internally bearded; sterile stamens shorter than the others. Seeds winged. Leaves opposite. They are of very easy culture in almost any ordinary garden soil, although a rich, moderately light loam is the most satisfactory. Propagation is readily effected by dividing the plants, about August or September, depending upon the flowering; if this operation be performed in spring, the results are not always so satisfactory. They may also be increased by means of seeds and young cuttings, inserted in sandy soil, in a cold frame.

C. barbata. *See* **Pentstemon barbatum.**

C. glabra (smooth). A glabrous variety of *C. obliqua*.

C. Lyoni (Lyon's).* *fl.* purple; spikes terminal, with the flowers clustered. July to September. *l.* petiolate, cordate-ovate, serrated. Plant glabrous, branched. *h.* 3ft. to 4ft. North Carolina, 1812. SYN. *C. major*. See Fig. 423. (B. M. 1864.)

C. major (large). A synonym of *C. Lyoni*.

C. nemorosa (wood).* *fl.*, corolla rosy-purple, ventricose; anthers woolly; peduncles three-flowered, downy. July. *l.* ovate, acuminated, serrated. Plant branched, glabrous. *h.* 1ft. North-west America, 1827. This species is midway between *Pentstemon* and *Chelone*. (B. R. 1211.)

C. obliqua (oblique).* *fl.* purple, in close terminal spikes. Summer. *l.* petiolate, oblique, lanceolate, unequally serrated, very smooth. *h.* 2ft. to 3ft. Less vigorous than *C. Lyoni*. North America, 1752. SYN. *C. purpurea*. (B. R. 175.) The variety *alba* produces white flowers, and is very showy.

C. purpurea (purple). A synonym of *C. obliqua*.

CHENOPODIACEÆ. An order of herbs or sub-shrubs. Flowers small, inconspicuous; perianth deeply divided. Leaves alternate, sometimes opposite, exstipulate. This order includes *Atriplex*, *Beta*, *Chenopodium*, and *Spinacia*.

CHENOPODIUM (from *chen*, a goose, and *pous*, a foot; in allusion to the shape of the leaves). ORD. *Chenopodiaceæ*. An extensive genus of herbaceous or sub-shrubby plants, of little ornamental beauty. They are more or less employed as pot herbs, particularly the species commonly known as "Good King Henry" (*C. Bonus-Henricus*). Calyx of three to five connate sepals, inferior, persistent and unaltered, closing upon, and often wholly enveloping, the fruit; corolla none. Seeds solitary, lenticular.

The Mercury Goose-foot, or Good King Henry, has, in some parts of England, especially in Lincolnshire, long been esteemed as a substitute for Asparagus. The following method of culture is recommended: The ground should be rich, dry, and deeply trenched. Plants should be put in, about April, 9in. asunder each way; or seeds sown

FIG. 424. FLOWERING BRANCH OF CHENOPODIUM AMBROSIOIDES.

in drills 9in. apart, afterwards hoeing out to 9in. from plant to plant. As soon as they have ripened off, a dressing of leaf soil, about 4in. or 5in. in thickness, should be applied. In the spring of the first year, only a small quantity should be cut, as the plants would be too greatly weakened; but each subsequent year, full crops will be

Chenopodium—*continued.*

had. During the season of vigorous growth, the plants are greatly improved by watering with liquid manure. Besides the young shoots forming a substitute for Asparagus, the leaves can be used when young instead of Spinach. These are rather large, considering the size of the plants. The latter must not, however, be too greatly denuded of foliage, or they will soon become worthless. A contemporary writer says that, from a south border, cutting generally commences early in April, and continues until the end of June. When properly grown, the young shoots should be almost as thick as the little finger; and, in gathering, it should be cut under the ground, somewhat similar to Asparagus.

C. ambrosioides (Ambrosia-like). Mexican Tea. *fl.* greenish. *l.* slightly petioled, oblong or lanceolate, repand-toothed, or nearly entire, the upper tapering to both ends; spikes densely flowered, leafy or almost leafless. A native of tropical America, but now naturalised in nearly all temperate climates. Annual. See Fig. 424.

C. atriplicis (Atriplex-like). *fl.* bright reddish-purple, disposed in clustered heads. *l.* numerous, petiolate, nearly spathulate. Stem angular, erect, slightly branched, reddish; young shoots and leaves covered with a fine rose-violet powder. *h.* 3ft. China. A vigorous half-hardy annual, well adapted for planting on grass-plats, or grouping with other plants in pleasure-grounds. SYN. *C. purpurascens.*

C. Bonus-Henricus. All-good, Good King Henry. *fl.*, corolla quite campanulate; spikes compound, terminal, and axillary, erect, leafless. August. *l.* triangular, arrow-shaped, mostly entire, large, dark green. Stems striated. *h.* 1ft. Britain. Perennial. (Sy. En. B. 1199.)

C. purpurascens (purplish). A synonym of *C. atriplicis.*

CHERIMOYER. *See* **Anona Cherimolia.**

CHERRY (*Cerasus*). There are two species of *Cerasus* found wild in Britain; others are natives of Southern Europe. The Morello, Duke, and Kentish varieties are supposed to have been derived from the wild, or dwarf, Cherry (*Cerasus Caproniana*), and the Geans, Hearts, and Bigarreaus from the tall wild Gean (*C. avium*). They have been in cultivation from an early period, and whether the origin of all the varieties now cultivated is confined to these species, or in part to others, is not definitely known. The Cherry is the earliest to ripen of any hardy fruit (at least, the early varieties are), and, being of a very refreshing character, is much appreciated. Those unfit for dessert on account of their acidity are employed for various purposes in cooking, and the Morellos are much used for preserving or bottling in brandy. Fig. 425 represents a corymb of Cherry, with fully expanded flowers.

FIG. 425. CORYMB OF CHERRY.

Propagation. This is effected by budding or grafting, and, to obtain new varieties, by seeds. The stock most generally used for grafting is the wild Gean, obtained by sowing seeds in nursery rows, planting them out at the

Cherry—*continued.*

end of the second year, and growing on until large enough for use. The Mahaleb stock (*C. Mahaleb*) is much used in France, but it is not suited in some soils in England. Being dwarf-growing, it is useful for dwarf trees, and for Morello and other small-leaved sorts. The general plan is to bud in the summer, when the bark runs freely, choosing cloudy weather for the purpose, and carefully selecting wood-buds. If the buds fail to unite, or do not afterwards grow, the stocks may be grafted the following spring. Selection of scions for grafting is an important matter. In some varieties, the whole length of the shoot will contain only blossom-buds, except the one at the point. In such cases, the latter must not be cut off. Scions should be cut off early in the year, and laid in the ground, until the stocks have begun to grow, which will generally be in March. If prepared in this way, there is a much greater chance of success.

Soil and Situation. The soil must not be too heavy; neither will a very light one, with dry subsoil, be suitable. A good deep loam, moderately rich and well drained, will suit Cherries admirably. Rank manure should not be mixed in the soil when preparing for planting; but well-decomposed leaf soil, burnt refuse, mortar rubbish, &c., will be of great assistance to keep the compost open if it is at all heavy. If Cherries are planted against walls, the borders should be formed to slope from the wall, in order to ensure drainage. For Cherry orchards, the site selected should, if possible, be somewhat undulated, for the same reason. Cultivation in orchards is not practised in all districts, but in some counties large quantities are grown in this way, notably in Kent, Hertfordshire, and Buckinghamshire. The position given to Cherry-trees in the majority of gardens, and that most convenient for protection, is a wall, varying in aspect with the sort grown. The earliest should be planted against a south wall; the mid-season and main crop varieties will be best suited with a western aspect; and the Morello and Kentish Cherries will do well on a wall facing north or north-west. Various systems of training are adopted for the Cherry, and the one selected must depend on the position and the space to be occupied. Standards are the most suitable for orchards, and should be planted from 20ft. to 30ft. apart. For covering high walls, an arrangement of fan-trained trees on tall stocks, with alternate dwarf trees, trained in the same way, is probably the best method. Where a large collection is desired, the trees may be grown in a limited space on either of the cordon systems; but the quantity of each sort will be somewhat limited if this method is adopted. Horizontal training is also practised, about 1ft. being allowed between the branches for the Bigarreau and other strong-growing kinds, and about 9in. for those of the May Duke type.

Protection. The Cherry is an early-flowering tree, and is, consequently, very subject to destruction by spring frosts. Trees on walls may be protected by light shading or double nets in frosty weather, but coverings that exclude light are injurious. Protection from birds, as soon as the fruit begins to colour, is very necessary with all the varieties of Cherries, or the whole crop may be lost. Netting the trees is the only effectual remedy. The net should be fastened under the coping, without leaving any open spaces, and be kept from the trees by means of stakes or frame-work, carefully fitting it at the bottom. If any spaces are left open, the birds are sure to effect an entrance.

Pruning. Very little pruning is necessary with standard Cherry-trees, beyond keeping the heads in shape and evenly balanced. Most of the varieties fruit on spurs, and should have the growths removed in summer to about 3in. long, thereby admitting light to the fruit, and enabling the plant to form its flower-buds for the following year. If these growths are properly shortened in summer, about the time the stoning process is completed, and all superfluous shoots removed, very little pruning will be necessary in winter.

Cherry—*continued.*

The Morello Cherry requires quite different treatment, in this respect, to any others, as the fruit is produced from the wood of the previous year. The weakest shoots, and some of the old wood, must be cut away, to prevent overcrowding, the strongest only being retained, and nailed in at a distance of about 3in. apart. The fruit may be allowed to hang on the trees of the Morello, if protected, until very late in the season. Thinning of the wood, and nailing in, should be done in spring, before the buds swell, or many of the latter will be broken off. Superfluous shoots should be removed during the summer, to allow the others to ripen, and to obviate the necessity of cutting the trees hard in winter.

Cultivation under Glass. Cherries may be successfully cultivated under glass, provided care be taken not to force them too much in the early stages of growth. They may be grown in pots, if extra attention is given to watering, or be planted out. Cordon trees might with advantage be introduced into the front or some other portion of Peach houses where early forcing is not practised, some of the early varieties being chosen for the purpose. It is important that the trees should not suffer for want of water, or, on the other hand, be allowed to get soddened. A temperature of 40deg. to 45deg. is sufficient to start with, air being admitted on all favourable opportunities, especially when the trees are in flower. Cold draughts must, however, be avoided. Ripe fruit may be obtained in April, if the trees are started in January, and very gently forced until after the stoning period. The fruits are liable to drop in large numbers before stoning, should the house be over-heated, or the trees kept in too close an atmosphere, consequently such conditions must be avoided. Large numbers often fall from outside trees, on account of frost or continued low temperature. Trees grown under glass should be fully exposed to the air, so soon as the fruit is gathered, in order to thoroughly ripen the wood. If planted in a house, the sashes should be left open; and if grown in pots, the trees may be removed, and plunged in the open. Watering must still be carefully attended to during the whole of the summer, to mature and prepare the trees for the next year's crop.

Cherry-trees are very liable to gumming at any part of the branches where pruning or other injury has been caused to the bark. It is not considered injurious except in bad cases. **Black Fly** (which *see*) is one of the most troublesome insects the trees are subject to.

Sorts. Appended are lists of the principal kinds in cultivation:

BIGARREAUS. Of these, the following are the most desirable:

Black Bohemian. Flesh and skin jet-black; richly flavoured and delicious.

Büttner's Black Heart. Larger than the common Black Heart, with even a more pleasant flavour.

Büttner's Yellow. Medium size, yellow, becoming amber when fully ripe; sweet and rich.

Downton. Skin pale yellow, spotted with red dots, flesh yellowish; one of the richest and most delicious.

Elton. Skin pale yellow on the shaded side, mottled with red next the sun; flesh whitish, very rich. The tree is a good bearer, and the variety is considered by many the best that can be grown.

Florence. Fruit large, pale amber, mottled with red; flesh firm, juicy, and sweet. This variety requires a wall with west or south-west aspect.

Frogmore Early. Of a deep red next the sun; juicy and rich. As early as May Duke.

Gascoigne's Heart, or **Hertfordshire Bleeding Heart.** One of the finest and most popular cherries.

Governor Wood. Fruit light red, and of the best quality. A very fine and prolific American sort.

Graffion, or **Ambrée.** White, marbled with red; flesh yellow, and highly flavoured.

Jaboulay. A large, rich, early red cherry, with a firm, highly-flavoured flesh.

Late Black. Very large and late; valuable for ripening in August.

Cherry—*continued.*

Monstrous Heart. Skin yellowish, changing to red; flesh purple, firm, and juicy; very large.

Napoleon. One of the largest and best of heart-shaped cherries, not unlike the Elton, but larger and earlier.

Tradescant's Black Heart. Dark red, changing to dark purple or black; flesh firm and sweet; very large and uneven.

GEANS. This class comprises the following sorts:

Adams's Crown. Pale red, mottled with yellow; flesh almond-white, full of juice, and richly flavoured.

Belle de Orleans. A roundish, heart-shaped variety, with a yellowish skin; flesh richly flavoured.

Black Eagle. A medium-sized delicious cherry, ripening in July.

Early Amber. Of good size, heart-shaped, with a pale amber colour; flesh yellow, sweet, juicy.

Early Purple Guigne. Fruit rather flattened on one side; dark, rich, and tender; very large and early.

Early Rivers. A large black early cherry, a seedling from the Purple Guigne; good and prolific.

Hogg's Red Gean. A beautiful red cherry, freckled with yellow; flesh a pale orange; juicy, tender, and sweet.

Late Amber Gean. Of medium size; skin very thin and semi-transparent; delicately and richly flavoured.

Late Purple Gean. One of the finest late sorts, ripening in the end of July.

Rose de Lyons, or **Early Lyons.** Light yellow in colour, and of a delicious flavour; one of the earliest and best cherries grown.

Waterloo. A noble-looking cherry, depressed at the end, and flattened on one side; black, covered with small dots; tender and juicy.

Werder's Early Black. Very large, with a deep suture on one side; deep purple colour, and a rich purple flesh, of delicious flavour.

DUKES, or MAY DUKES. These, though not so sweet as the two classes already named, are nevertheless fully as popular, and equally useful. For all culinary purposes, this class of Cherries, from their sharp sub-acid qualities, are preferred to either the Bigarreau or Gean.

Archduke. Of excellent quality, almost jet-black when ripe; flesh deep red, tender, and juicy; ripens in July. This is the largest of the Dukes.

Belle Magnifique. A very large, clear, bright red cherry, with yellow flesh, and a sharpish sub-acid flavour.

Büttner's October. Light red flesh, and a pleasant, sharpish flavour. A very useful, late, and excellent culinary variety.

Carnation. Flesh tender, rather acid. A valuable reddish-yellow cherry, hanging till the end of August or middle of September.

Duchesse de Pallnau. Very large, brilliant red, becoming darker as it ripens; flesh tender and juicy, richly coloured, and briskly acid.

Imperatrice Eugenie. An early sort, with all the good qualities of the Duke family; ripening early in June.

Late Duke. A valuable late variety, ripening in August.

May Duke. Flesh red, tender, juicy, and pleasantly sub-acid; ripening almost black. Probably more extensively grown than any other.

Nouvelle Royale. A hybrid between the Dukes and the Kentish, and retains many qualities of both; larger and more uneven than any of the Dukes.

Reine Hortense. Very large, fine, semi-transparent, bright red, with yellow flesh, and brisk sub-acid flavour.

Royal Duke. Flesh reddish and tender; very rich. A handsome red cherry, ripening in July.

Transparent. A beautiful sort, revealing the delicate netted nature of the flesh, which is melting and tender.

MORELLO and KENTISH CHERRIES. In these, we reach a maximum of acidity, and yet this class is one of the most useful of all Cherries.

Kentish, or **Flemish.** These are so nearly alike that they may be classed together, though some growers offer them as distinct varieties. In ordering, it will be best to ask for Kentish Cherries. Fruit red, medium-sized, round, having a rather acid property, which, however, has been held to enhance its value for culinary and preserving purposes. After the fruit is ripe, the stalk adheres so firmly to the stone that they may be withdrawn together without removing much of the pulp.

Morello. A medium-sized round cherry, becoming nearly black when fully ripe. Flesh deep reddish-purple, with a sharp acid flavour. It is largely used for many purposes.

Ostheim. Larger and less acid than the Morello.

Weeping, or **Pendulous Morello.** A very graceful variety, equally fertile, and of the same quality as the common Morello, admirably adapted for forming small standards in the open air.

CHERRY, BARBADOS. *See* **Malpighia glabra.**

CHERRY, CORNELIAN. *See* **Cornus mas.**

CHERRY FLY. *See* **Aphides** and **Black Fly.**

CHERRY, HOTTENTOT. *See* **Cassine Maurocenia.**

CHERRY LAUREL. *See* **Prunus Lauro-cerasus.**

CHERRY PLUM. *See* **Prunus cerasifera.**

CHERRY, WINTER. *See* **Physalis Alkekengi.**

FIG. 426. PLANT OF BULBOUS-ROOTED CHERVIL, IN FLOWER.

CHERVIL, BULBOUS-ROOTED (*Chærophyllum bulbosum*). A hardy biennial, native of Southern Europe (see Fig. 426). This produces roots (see Fig. 427) about

FIG. 427. ROOTS OF BULBOUS CHERVIL.

Chervil, Bulbous-rooted—*continued.*

the size of, and somewhat like, Early Horn Carrots. They are yellowish-white, rather sweet, and have the same flavour as the leaves of the Common Chervil. The seeds retain their germinative properties a short time only; consequently, they must either be sown as soon as ripe, or be kept in sand through the winter, out of the reach of frost. If sown late in autumn, the seeds will, in all probability, perish. When stratified during winter, the seeds may be sown in March, either broadcast, or in drills 1ft. apart. The leaves wither about July, when the roots may be lifted and stored, like Potatoes, in a dry shed. The beds must be kept clean in summer by frequent hoeings. Bulbous-rooted Chervil is eaten, when cooked, as a vegetable, but it is not extensively cultivated in this country.

FIG. 428. FLOWERING BRANCH OF HORSE CHESTNUT.

CHERVIL, COMMON or GARDEN (*Anthriscus cerefolium*). A hardy annual, native of various parts of Europe. It is grown for the leaves, which are used for culinary purposes and in salads. Seed should be sown occasionally—not too much at a time—either broadcast or in shallow drills. The plants may be thinned out to 8in. apart; and in hot weather, if the ground is light, they should be watered plentifully, or they will soon run to seed. It is advisable to keep a few plants in a cold frame through the winter, as leaves may then be gathered at any time.

Curled Chervil is a variety of the Common, with beautifully curled leaves, which may be employed for garnishing, in addition to its ordinary use. The plants with the best curled leaves should be selected, if some are kept

Chervil, Common or Garden—*continued.*

for seed, as they soon deteriorate. A cool north border is the best position for growing Chervil in summer, and a south border is preferable for it in winter.

CHESTNUT, HORSE. This was introduced into Britain about two centuries ago. In foliage, it exhibits a character quite distinct from that of any other hardy tree, and the pyramidal panicles of snowy-white flowers dashed with yellow and pink (see Fig. 428), place it in the first rank amongst deciduous subjects eminently adapted for effective use by the landscape gardener. *See* **Æsculus.**

CHESTNUT, MORETON BAY. *See* **Castanospermum.**

CHESTNUT, SWEET or **SPANISH.** *See* **Castanea sativa.**

CHEVALLIERA. *See* **Æchmea Veitchii.**

CHICA. *See* **Bignonia Chica.**

CHICORY (*Cichorium Intybus*). Succory, or Wild Endive. A hardy perennial, native of Britain. The plants are cultivated much more in France than with us, chiefly for the leaves, which are blanched and used as a salad. A variety called the Coffee Chicory is grown, in some parts of the Continent, for the roots, which are cut up and prepared as a substitute for coffee. Another large-growing variety, called the Witloof, is much cultivated in Belgium; and since it was introduced to this country, it has gained favour as a vegetable, cooked whole, or blanched, and used as the other varieties. The culture is very easy, and the leaves, if grown quickly and well blanched, are wholesome and much esteemed. The plants may be blanched outside in summer, but the salad is best when forced in winter, forming what is called by the French

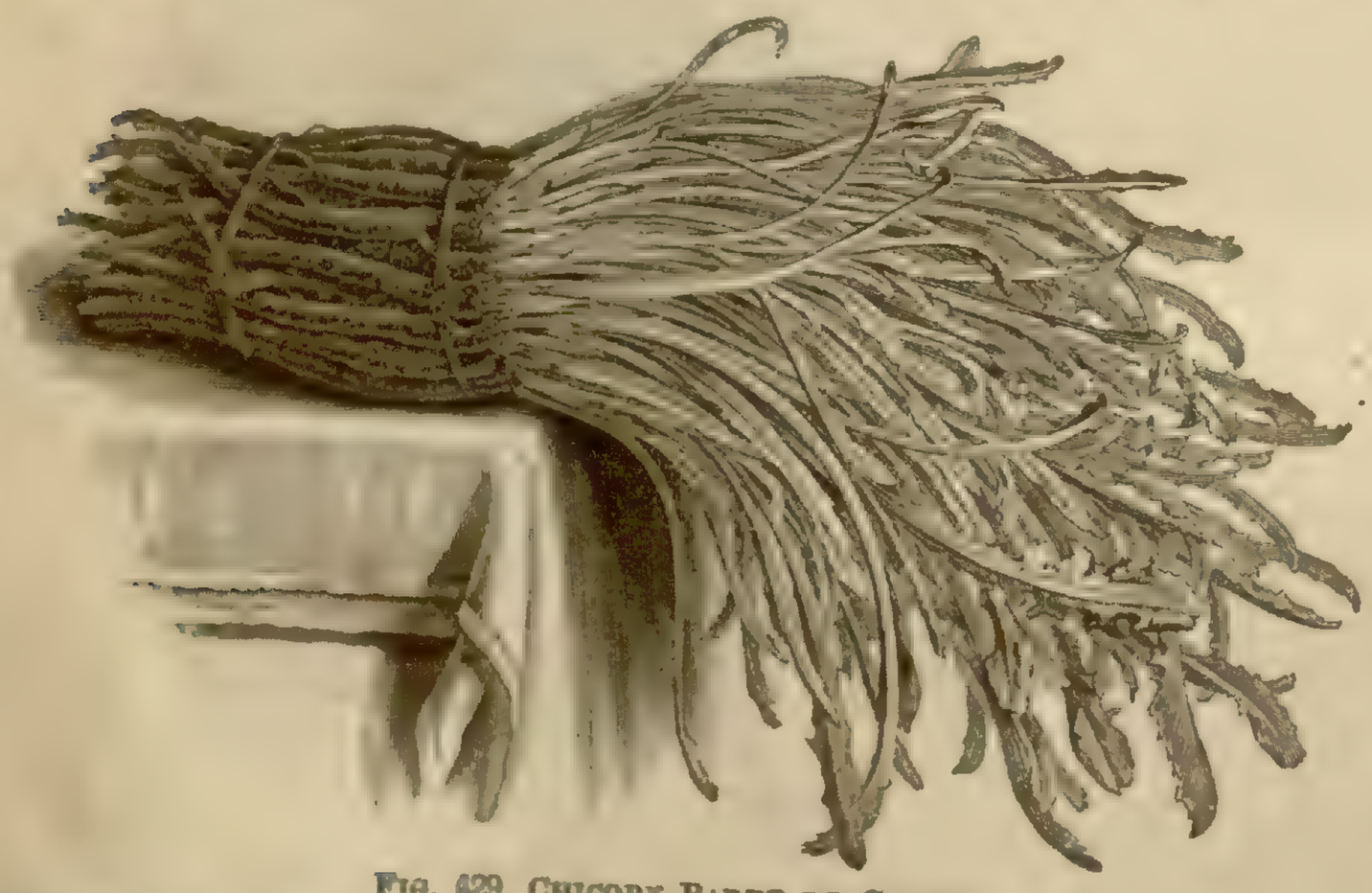

FIG. 429. CHICORY BARBE DE CAPUCIN.

"Barbe de Capucin" (see Fig. 429). The roots grow somewhat like Carrots, and may be taken up in autumn, and forced in the same way as Sea Kale.

Cultivation. An open situation, with rather light and moderately rich soil, should be selected for preparing roots of Chicory for winter forcing. The seed should be sown in drills, 1ft. apart, in May or June, the plants being thinned when up to a distance of 6in. Occasional hoeings between the rows, to keep down weeds, will be all that is necessary during the summer. If summer supplies are required, successional sowings should be made in the same way, about every month, from April to October, and the leaves blanched as soon as they are large enough for use.

Forcing. Chicory may be successfully forced in a temperature of from 55deg. to 60deg. The roots should be placed, about 3in. apart, in boxes or large pots of soil, care being taken to keep the crowns just above the soil. A good watering is necessary to settle the earth around the roots. The pots or boxes should be placed in a

Chicory—*continued.*

warm, dark position. A mushroom house, kept dark and having a suitable temperature, is a very good place. A succession must be kept up, but a second or more crops may be obtained from the same roots, which, however, will not be so strong as the first. The Common Chicory is mostly grown, but the Witloof will succeed under the same treatment. Empty pots or boxes, of the same sizes as those used, should be inverted over the roots to exclude light; or the darkness of a mushroom house may be sufficient in many cases.

CHILI. *See* **Capsicum baccatum.**

CHILOPSIS (from *cheilos*, a lip, and *opsis*, resemblance; on account of the calyx being furnished with a distinct lip). ORD. *Bignoniaceæ*. A greenhouse evergreen shrub, requiring a compost of peat and fibry loam. Cuttings of half-ripened shoots will root in sand, under a bell glass, in a gentle bottom heat.

C. linearis (narrow-leaved). *fl.*, corolla dark purple, with a tubular base, and a dilated companulate throat; lobes oval-roundish, with curled, crenated edges; racemes terminal, short, dense, tomentose. May. *l.* alternate, linear, flat, elongated, 3in. to 5in. long, glabrous, coriaceous, attenuated at both ends. *h.* 10ft. Western North America, 1825. An erect branched shrub.

CHIMAPHILA (from *cheima*, winter, and *phileo*, to love; the plants are green in winter). ORD. *Ericaceæ*. Ornamental evergreen suffruticose plants, with creeping roots. Flowers corymbose; scapes naked. Leaves lanceolate, serrated, verticillate. For culture, *see* **Pyrola.**

C. corymbosa (corymbose).* *fl.* greenish-white, tinged with red, corymbose, pendulous, at length somewhat erect. June. *l.* cuneate-lanceolate, serrated, four to five in a whorl. *h.* 3in. to 6in. Northern hemisphere, 1752. SYN. *Pyrola umbellata*. (B. M. 778.)

C. maculata (spotted).* *fl.* white, pendulous; peduncles downy, bearing a two to three-flowered corymb at the apex. June. *l.* lanceolate, acute, with white bands on the upper surface along the nerve and veins, under surface red; opposite, or four in a whorl. Stem procumbent at base and ascending at apex. North America, 1752. SYN. *Pyrola maculata*. (B. M. 897.)

CHIMNEY BELL-FLOWER. *See* **Campanula pyramidalis.**

CHIMONANTHUS (from *cheimon*, the winter, and *anthos*, a flower; in reference to the time of flowering, December and January). ORD. *Calycanthaceæ*. A hardy shrub, with the flowers appearing before the foliage, in the axils of the leaves of the preceding year. Flowers whitish or yellow, purplish inside, very sweet-scented. Bark and leaves without scent. Where sweet-scented flowers are in request during the winter months, the delicious aromatic fragrance of the blossoms of this shrub makes it a general favourite. It is suitable for training against walls and buildings having a south or western aspect. It thrives best in a deep rich sandy soil, and should be kept neatly trained to the wall against which it is planted. It also requires pruning annually, so as to have the principal branches well clothed with young wood, as the blossoms are produced on the previous season's growth. Therefore, when the plants have finished flowering, go over them, and cut in close to the main branches all the young shoots that have flowered, except the leading ones, which must only be shortened to about half their length. The result of this treatment will generally be a good crop of wood, suitable for blooming the following season. Propagation is best effected by means of layering, in the autumn.

C. fragrans (fragrant).* *fl.* very fragrant. *l.* lanceolate, acuminate, scabrid, slightly hairy beneath. A slender branching shrub. Japan, 1766. SYN. *Calycanthus præcox*. (B. M. 466.) Of the two varieties, *grandiflorus* is by far the best; its flowers are considerably larger and more spreading. (B. R. 451.)

CHINA ASTER. *See* **Aster** and **Callistephus.**

CHINESE CHERRY, DOUBLE. *See* **Cerasus serrulata.**

CHINESE ROSE. *See* **Hibiscus rosa-sinensis.**

CHIOCOCCA (from *chion*, snow, and *kokkos*, a berry; the berries of *C. racemosa* are white, hence it is called Snowberry). Snowberry. ORD. *Rubiaceæ*. Stove evergreen shrubs, generally with a climbing habit. Racemes axillary, opposite, simple, or panicled. Leaves opposite, ovate, or oblong, acute, glabrous. They thrive in a mixture of loam, peat, and sand. Cuttings strike root freely in sand, under a hand glass, in heat.

C. anguifuga (snake-defeating). *fl.* white; racemes panicled. June. *l.* ovate, acuminated; stipules very short, broad, each ending in a short point. *h.* 3ft. to 4ft. Brazil, 1824.

C. racemosa (racemose).* *fl.*, corollas at first white and scentless, but at length becoming yellowish and sweet-scented; racemes many-flowered. February. *l.* ovate, lanceolate, smooth; stipules mucronate. *h.* 4ft. to 6ft. West Indies, 1729.

CHIONANTHUS (from *chion*, snow, and *anthos*, a flower; referring to the snow-white flowers). Fringe-tree. ORD. *Oleaceæ*. Hardy low trees or shrubs, having the branchlets compressed at the top. Flowers in gracefully drooping panicles, from lateral buds. Leaves opposite, simple, entire. This genus differs from *Olea* principally in the segments of the corolla being barely united at the base. *C. virginica* is a fine large ornamental hardy shrub; it requires to be grown in moist soil, either sandy peat or sandy loam, in a sheltered situation. Propagation may be effected by seeds or by layers. Seeds are easily procurable from America, and raised in a cold frame; and, as the plant does not root very readily, this is the best way to increase it. By grafting or budding it on the common Ash, it succeeds very well.

C. retusus (retuse-leaved). *fl.* white, sweet-scented. May. *l.* long-stalked, obovate, retuse, hairy beneath. China, 1850. A low shrub. (L. P. F. G. iii. 85.)

C. virginica (Virginian).* *fl.* white, pedicellate; racemes terminal. May. *l.* oval, oblong, or obovate-lanceolate, glabrous. *h.* 10ft. to 30ft. North America, 1796. Hardy. The scented flowers come out in May, hanging in long bunches, and, from the corolla being cut into narrow segments, they give it the name of Fringe-tree. There are two or three forms of this species.

CHIONODOXA (from *chion*, snow, and *doxa*, glory; in reference to the plants flowering among the melting snows of their native habitats). ORD. *Liliaceæ*. A small genus containing the three species here described—hardy spring-flowering bulbs. It comes near *Puschkinia*, with which, indeed, it is sometimes confounded. Perianth rotate, campanulate, or funnel-shaped; the equal ligulate, spreading segments in the expanded flower two or three times as long as the tube. *C. Luciliæ* may be grown in pots, and forces well if allowed first to make good roots, by being treated like the Hyacinth. It should be kept very near the glass. Although it does remarkably well out of doors, perfection is best attained by growing it in cold pits or under handlights. All the species succeed admirably in a compost of equal parts peat, loam, and sand, also in leaf mould and sand. Propagated by offsets; or by seeds, which are produced freely, and should be sown in drills outside as soon as ripe. The young bulbs should not be disturbed for three years.

FIG. 430. CHIONODOXA LUCILIÆ, showing Flower-spike and Habit.

C. cretica (Cretan). *fl.* white or pale blue; scape slender, 6in. to 10in. high, rarely more than one or two-flowered; perianth somewhat larger than that of *C. nana*, which this species otherwise resembles. Mountains of Crete.

C. Forbesii (Forbes's). A synonym of *C. Luciliæ*.

C. Luciliæ (Lucilia's).* *fl.* intense blue, shading to white in the centre, nearly 1in. across, on slender pedicels; spike usually three to six-flowered, but sometimes nearly twenty flowers are produced. Spring. *l.* few, narrow, erect. *h.* 6in. Asia Minor and Crete, 1877. This is, perhaps, one of the handsomest of spring flowers of recent introduction. SYN. *C. Forbesii*. See Fig. 430. (B. M. 6433.) There is also a white-flowered form.

C. nana (dwarf).* *fl.* white, lilac, ½in. across, in many-flowered umbels. Spring. *l.* linear, shorter than the peduncle. *h.* 4in. Crete, 1879. (B. M. 6453.)

CHIONOGRAPHIS (from *chion*, snow, and *graphis*, a pencil; the flower-spike being like a brush of snow). ORD. *Liliaceæ*. A very remarkable and ornamental herbaceous perennial, requiring slight protection outside in winter. It thrives in a compost of loam, peat, and sand. Propagated, if necessary, by seeds, or by divisions of the roots.

C. japonica (Japanese).* *fl.* pure white, closely packed along a space of 4in. to 5in., spicate; perianth segments variable, four to six, linear, long. Spring. *l.* glabrous, in tufts at the bottom of a long spike, with scattered leafy bracts. *h.* 6in. to 1ft. Japan, 1880. (B. M. 6510.)

CHIRITA (from *Cheryta*, the Hindostanee name for the Gentian plant). ORD. *Gesneraceæ*. Greenhouse or stove evergreen herbaceous plants or shrubs. Corolla tubular, bilabiate; calyx five-cleft, valvate in æstivation. For culture, *see* **Gloxinia.**

C. lilacina (lilac).* *fl.* very beautiful and produced in great abundance; corolla lobes pale blue; tube and throat white; base of tube ornamented with a large yellow blotch at the base. Chiriqui, 1870. This charming plant is very ornamental and effective.

C. Moonii (Moon's).* *fl.* pale purple; corolla large, downy; peduncles axillary, solitary or twin. July. *l.* shortly petiolate, three to four in a whorl, ovate-lanceolate, acutish, obsoletely and glandularly serrated. Branches bluntly tetragonal, suffruticose, villous. *h.* 2ft. Ceylon, 1847. Stove. (B. M. 4405.)

FIG. 431. CHIRITA SINENSIS.

Chirita—*continued.*

C. sinensis (Chinese).* *fl.* lilac; corymbs many-flowered, bibracteate at the base. July. *l.* opposite, elliptic-ovate, crenated; petioles trigonal. Stemless. *h.* 6in. China, 1843. Greenhouse evergreen. See Fig. 431. (B. M. 4284.)

C. zeylanica (Ceylon). *fl.* rich purple, reddish and paler in the tube; large, handsome. *l.* stalked, ovate, acute, entire, covered with rather close-pressed silky-brownish hairs. *h.* 1ft. Ceylon, 1840. Stove. (B. M. 4182.)

CHIRONIA (a classical name, after Chiron, a centaur, son of Phillyra and Saturn; he was famous for his knowledge of music, medicine, and shooting, and taught the use of plants and medicinal herbs). ORD. *Gentianeæ*. Very ornamental small soft-wooded greenhouse perennial herbs or shrubs, all from Southern Africa. Flowers reddish-pink or purple, terminal; corolla salver-shaped, with a narrow tube and a spreading limb, which is longer than the tube. Leaves sessile, opposite, decussate. Stems simple or branched. They thrive in a roughish sandy soil, composed of three-parts peat and one of loam, with a considerable admixture of pure sand. Rather small pots and perfect drainage are matters of importance in their culture. They are easily propagated by cuttings, inserted in sandy soil, and placed in a gentle heat, in spring. Great care must be taken not to over-water, especially in the winter months.

C. baccifera (berry-bearing). *fl.* reddish-pink, terminal, solitary. June. *l.* opposite, decussate, glabrous, linear-lanceolate, sessile, decurrent, with reflexed edges, longer than the internodes. Branches sub-tetragonal. 1759. (B. M. 233.)

C. floribunda (many-flowered).* *fl.* pink; peduncles solitary, one-flowered; petals obovate. June. *l.* linear, or oblong-ovate, acute. *h.* 2ft. 1843. Glabrous, much branched. (P. M. B. xii. 123.)

C. glutinosa (glutinous). *fl.* reddish-pink; corolla large, with an expanded five-parted limb. Summer. *l.* three to five-nerved, ovate-lanceolate. *h.* 2ft. 1843. Plant dark green, smooth. (P. M. B. xv. 245.)

C. jasminoides (Jasmine-like).* *fl.* red or purplish; panicles dichotomous; or flowers terminal, solitary on the tops of the branches. April. *l.* lanceolate, linear. Stem tetragonal. *h.* 1ft to 2ft. 1812. Plant glabrous. (B. R. 197.)

C. linoides (Linum-like).* *fl.*, corolla red, with ovate-oblong, obtuse segments; peduncles terminal, elongated. July. *l.* linear, erect, fleshy, acute. Stem branched; branches terete, fastigiate. *h.* 1ft. to 2ft. 1787. (B. M. 511.)

CHITONIA. *See* **Miconia.**

CHIVES, or **CIVES** (*Allium Schœnoprasum*). A hardy perennial, native of Britain. Chives do well in any garden soil, and may be increased by division of the roots, in spring or autumn. Their chief uses are in soups and salads, being preferred for the latter, as they are much milder than onions, and also more tender. If planted in small bunches, about 9in. apart, and not allowed to seed, they will soon form good-sized clumps. When required for use, each clump may be cut in turn, close to the ground; these will soon grow again, and the produce be found more tender each time. Beds should be replanted at least once in three or four years.

CHLIDANTHUS (from *chlideos*, delicate, and *anthos*, a flower). ORD. *Amaryllideæ*. A small genus, containing two or three species, confined to South America. They are very ornamental, half-hardy, bulbous plants, the leaves appearing after the flowers. They should be grown in the open air, in a compost of peat, leaf soil, and loam, in equal parts, with some sand, in well-drained pots, until autumn, when they should be removed to a cool part of the greenhouse, and kept dry until the following April; they may then be repotted, watered, and allowed a little more warmth. Propagated freely by offsets, which may be removed, when repotting, in spring.

C. fragrans (fragrant). *fl.* yellow, fragrant, sub-sessile, in few-flowered umbels; perianth with an erect cylindrical tube, widened at the mouth, and a nearly equal somewhat spreading limb of six segments. June and July. *l.* linear-lorate, sheathing at the base. Bulbs tunicated. Buenos Ayres, &c., 1820. (B. R. 640.)

CHLOANTHES (from *chloos*, greenish-yellow, and *anthos*, a flower; referring to the greenish flowers). ORD. *Verbenaceæ*. Pretty greenhouse evergreen shrubs, allied to

Chloanthes—*continued.*

Lantana. Flowers solitary, axillary, on short peduncles; corolla tube with a woolly ring on its interior, above the apex of the ovary. Leaves opposite or ternate. They thrive in a compost of fibry loam, and turfy, sandy peat. Cuttings of young shoots root freely in sandy soil, under a hand glass.

C. coccinea (scarlet). *fl.* scarlet, nearly sessile and axillary, but collected into short leafy spikes or heads at or near the summits of the branches. *l.* opposite or in whorls of three, narrow and nearly terete, owing to the revolute margins, obtuse, ½in. to 1in. long, bullate-rugose. Stems usually clothed with a white cottony wool. *h.* 1ft. to 2ft. Western Australia.

C. glandulosa (glandular). *fl.* yellowish, 1½in. long, axillary; peduncles 3in. to 4in. long. July. *l.* lanceolate or linear-lanceolate, bullate-rugose and decurrent, about 1½in. to 3in. long. *h.* 2ft. New South Wales, 1824.

C. stœchadis (Stœchas-like).* *fl.* greenish-yellow. June to August. Stem erect. *h.* 2ft. New South Wales, 1822.

CHLORA (from *chloros*, pale; alluding to the pale yellow-coloured flowers). Yellow-wort. ORD. *Gentianeæ*. Very pretty little hardy (mostly) annuals. Flowers yellow, terminal, stalked, aggregate or solitary; corolla salver-shaped; tube shorter than the calyx. Leaves opposite, sessile, or perfoliate, entire. They are very easily cultivated, succeeding in pots or borders, in ordinary garden soil; and may be readily propagated from seeds, which should be sown in pots, in a cold frame, in spring.

C. grandiflora (large-flowered).* *fl.* golden-yellow, much larger than those of the kinds described below. *h.* 6in. to 1ft. Corsica and Sardinia. Hardy biennial. (R. G. 469.)

C. imperfoliata (not-perfoliate). *fl.* terminal; corolla deep yellow, six-cleft. June. *l.* sessile, somewhat stem-clasping, ovate, acute. Stems simple, tetragonal. *h.* 1ft. South-western Europe, 1823.

C. perfoliata (perfoliate).* *fl.* golden yellow, in a corymb of two forks, with a pedicellate flower in each fork. July. *l.*, root ones oval, sessile, rosulate, the lower stem ones oval-lanceolate, the rest perfoliate. Stem dichotomous, cylindrical. *h.* 1ft. Europe, in chalky pastures or banks, and limestone and clay soils. (Sy. En. B. 913.)

C. serotina (late-flowering). *fl.* yellow. November. *h.* 1ft. Europe, 1832.

CHLORANTHACEÆ. An order of tropical trees, shrubs, or rarely herbs. Flowers minute, in simple or branched terminal spikes, often articulate. Fruit a small drupe. Leaves opposite, stipulate. Of the few genera, the one best known in this country is *Chloranthus*; the minute flowers of *C. inconspicuus* are said to be used by the Chinese in scenting tea.

CHLORIDE OF LIME is composed of chlorine and lime. When exposed to the air, it parts with a portion of its major constituent, chlorine, and is thus changed to Muriate of Lime, a salt which rapidly absorbs moisture from the air. It has been used with moderate success for quickening the growth of Turnip seed, in the proportion of 1lb. to six gallons of water, soaked for thirty-six hours. Great care should be taken in using it, as it will totally destroy the germinating powers of many seeds. Chloride of Lime is also very valuable as a disinfectant—solution ½lb. to two gallons of water. It is one of the most effectual applications for fixing ammoniacal fumes. In order to bleach skeleton leaves and fruits, the green cellular portions of which have been got rid off by maceration in water for a longer or shorter period, according to the texture and general character of the specimens, immersion in a weak solution of Chloride of Lime for a day or two, is all that is necessary.

CHLORIS (from *chloros*, green). ORD. *Gramineæ*. A genus of very pretty greenhouse or hardy annual grasses. Spikelets one-flowered, awned, singly sessile in two rows on one side of simple spikes, either solitary or digitate at the end of the peduncle, the rachis of the spikelet articulate immediately above the glumes. The few species in cultivation are easily grown in the open air, during the summer months, in a light sandy soil. Propagated by seeds, in a warm situation, during May.

C. barbata (bearded).* *fl.*, spikes 1½in. to 2in. long, many-fascicled;

Chloris—*continued.*

glumes bearded, ciliated; male valves ventricose, bearded. Summer. *l.* flat, with loose sheaths. *h.* 1ft. India, 1777.

C. elegans (elegant). *fl.*, spikes numerous, fascicled; glumes keeled, lanceolate, scabrid on the back. *l.* linear, flat, striated, glabrous on the outer, scabrid on the inner surface. *h.* 1ft. Mexico.

C. radiata (radiate). *fl.*, spikes many-fascicled, nearly erect; florets subulate, smooth. Summer. *l.* narrow. *h.* 6in. West Indies, 1739.

CHLOROGALUM (from *chloros*, green, and *gala*, milk; referring to their green juice). Soap-plant. ORD. *Liliaceæ*. A genus of curious and distinct hardy bulbs, containing three species, all from California. For culture, *see* **Ornithogalum**. The only one in cultivation is *C. pomeridianum*.

C. Leichtlini. *See* **Camassia esculenta Leichtlini.**

C. pomeridianum (afternoon).* *fl.* white, purplish-veined; stems panicled, branched. June. *l.* flaccid, glaucous, with the edges and nerves rough. *h.* 2ft. California, 1819. SYNS. *Anthericum pomeridianum* (B. R. 564), *Ornithogalum divaricatum* (B. R. 1842, 28), and *Phalangium pomeridianum*. The bulbs are frequently used in California as a substitute for soap. The flowers only open after mid-day, hence the specific name.

CHLOROPHYLL. The green, resinous, granular colouring matter of plants.

CHLOROPHYTUM (from *chloros*, green, and *phyton*, a plant). ORD. *Liliaceæ*. Greenhouse or stove evergreen perennials, allied to *Anthericum*. They are of easy culture in a rich sandy loam. Propagated by seeds or suckers, or by divisions of the plant in spring. All the species are white-flowered, and are of no special horticultural value. Out of the forty species known to science, the following have been, or are, in cultivation: *affine*, *Bowkerii*, *elatum*, and *falcatum*.

CHLOROSPATHA (from *chloros*, green, and *spathe*, a spathe; green spathe). ORD. *Aroideæ*. Allied, and requiring similar culture, to **Xanthosoma** (which *see*).

C. Kolbii (Kolb's). This, the only species, is a spotted-stalked, pedate-leaved, stove tuberous perennial, with elongated, cylindrical, convolute spathes. Chiefly of botanical interest. New Grenada, 1878. (R. G. 933.)

CHLOROXYLON (from *chloros*, green, and *xylon*, wood; in allusion to the colour of the wood). ORD. *Meliaceæ*. A fine stove timber tree, having terminal panicles of small, whitish flowers, and abruptly pinnate leaves. It succeeds well in a compost of loam and peat. Ripe cuttings, with their leaves intact, will root in sand, under a hand glass, in a moist heat.

C. Swietenia (Van Swieten's). Satin-wood Tree. *l.*, leaflets many pairs, unequal, ovate, somewhat rhomboid, obtuse. *h.* 50ft. India, 1820. The wood of this tree is of a deep yellow colour, remarkably close-grained, heavy, and durable. SYN. *Swietenia Chloroxylon*. (B. F. S. 11.)

CHOISYA (named after M. Choisy, a Genevese botanist, author of several monographs in De Candolle's "Prodromus"). ORD. *Rutaceæ*. A very beautiful shrub, quite hardy in the southern and many other parts of Britain, with the protection of a wall. It thrives in a southern or western aspect, and requires a compost of loam and peat, to which a small quantity of sand and leaf mould is added. It may be easily propagated by ripened cuttings, which will root freely in sand, under a hand glass, in gentle bottom heat, during spring and early summer.

C. ternata (ternate). *fl.* white, sweet-scented; peduncles axillary at the tops of the branches, simple, or branched, with bracts at the divisions under the pedicels, which are channelled beneath. July. *l.* opposite, ternate, stalked, bright green, full of pellucid dots. *h.* 6ft. Mexico, 1825. (R. H. 1869, 332.)

CHOKE-CHERRY. *See* **Cerasus virginiana.**

CHOMELIA (named after J. B. Chomel, physician to Louis XV.; author of "Abrégé de L'Histoire des Plantes usuelles," 12mo, Paris, 1712). ORD. *Rubiaceæ*. Stove evergreen shrubs. For culture, *see* **Ixora**, from which the present genus differs in habit and inflorescence, but more particularly in the fruit containing a hard nut.

C. fasciculata (fascicled). *fl.* white; pedicels two or three together, axillary, one-flowered. *l.* ovate, acute, glabrous, on short petioles. *h.* 5ft. Grenada, 1825.

Chomelia—*continued.*

C. spinosa (spiny).* *fl.* white, 1½in. long, fragrant at night; peduncles axillary, usually three-flowered. *l.* ovate, acuminate, almost sessile, glabrous. *h.* 8ft. to 12ft. Carthagena, 1793.

CHONDRORHYNCHA (from *chondros*, cartilage, and *rhynchos*, a beak; in reference to the beak-like rostellum). ORD. *Orchideæ*. Stove epiphytal orchids, allied to, and requiring the same cultivation as, **Lycaste** (which *see*).

C. Chestertoni (Chesterton's).* *fl.* yellow; lateral sepals developing into a very long, sharp point; petals with a much-developed fringe; lip also with very long fringes. Columbia, 1879. A very curious species.

C. fimbriata (fimbriated). *fl.* very pale sulphur-coloured, with brown spots at the base of the column, solitary; sepals ligulate, acuminate, sometimes undulated at the margin; petals oblong-apiculate, with finely-toothed margins; lip cuneate at the base, flabellato-oblong, three-lobed, or hastate oblong-triangular, bilobed, fimbriate and undulate on the whole of the margin; column clavate. *l.* cuneate-oblong or cuneate-lanceolate, acute. Roots very numerous, thick, forming a sort of nest. Plant bulbless. New Grenada. (Ref. B. 107.)

CHORETIS GLAUCA. *See* **Hymenocallis glauca.**

CHORISPORA (from *choris*, separate, and *spora*, a seed; in allusion to each seed being inclosed separately in the pod). ORD. *Cruciferæ*. A genus of about seven species of annual or biennial, branched, slender, smooth or pilose herbs, allied to *Cakile*. Racemes opposite the leaves, erect, elongated. Leaves either pinnatifid or entire. They are all of easy culture in common garden soil. Increased by seeds, sown in spring, outside.

C. Greigii (Greig's). *fl.* reddish-violet, about ¾in. in diameter. *l.* long, narrow, pinnatifid, forming a rosette. *h.* 1ft. to 1½ft. Turkestan, 1879. Biennial. (R. G. 984.)

C. tenella (delicate). *fl.* purple. July. *l.* smooth; upper ones lanceolate, toothed; lower ones pinnatifid. *h.* 4in. to 6in. Southern Russia, 1780. Annual.

CHORIZEMA (from *choros*, a dance, and *zema*, a drink; this genus was, says Don, originally discovered by Labillardière, upon the south-west coast of New Holland, at the foot of the mountains, near a spot where, after being tantalised with finding many salt springs, his party had just met with an ample supply of fresh water; this welcome refreshment, of which he speaks feelingly in his book, seems to have suggested the name). ORD. *Leguminosæ*. Greenhouse evergreen sub-shrubs, with alternate, simple, sinuately toothed, or entire leaves. They are mostly trained on globe and other trellises, with excellent effect, the whole trellis being lighted up with the brilliant beauty of their flowers, slightly toned down by the pleasing forms and refreshing variation of the leaves. They are admirably adapted for clothing dwarf columns or pillars, and covering dwarf walls. They also form fine loose bushes, if allowed to grow freely, and produce a number of shoots, the outer ones hanging over and partly hiding the pots. They all grow freely in a mixture of peat and loam, fibry, but not too rough, with a large proportion of sharp silver sand. The drainage should also be liberal, and the pots scrupulously clean. In potting, the soil should be pressed firm, as for Heaths, Azaleas, and other hard-wooded plants. Loose potting kills thousands of choice plants every year. A certain degree of solidity is needful in the potting of hard-wooded plants, to enable the roots to grip the fresh soil. If they miss doing so, the new soil sours, the roots remain where they are, or the extremities—their most vital parts—rot off, and the plants languish and die. If the soil is used in a proper condition as regards dryness, it is hardly possible to overdo the compression with the fingers and hands. The best time to pot these plants is just as the shoots begin to break afresh. They may finish their growth in a common greenhouse, or have a little more heat during their growing period. At the end of summer and during the early autumnal months, they may be placed out of doors, in a sheltered place, care being taken to stand the pots on a worm-proof bottom. Early in the autumn, the plants should be taken under glass, before being soaked or sodden with heavy rains.

Chorizema—*continued.*

Chorizemas bear pruning well, and the best time to perform this operation is as soon as they have finished flowering—say, with early plants, towards the end of May. But, if room can be found for them, they need not be cut in much, and they will then soon form large plants, covering the trellises a yard through, and 4ft. or more high. They seldom, however, look better than when placed in 8in. or 10in. pots, clothing a globular trellis. They require plenty of water during the flowering and growing seasons, and if used as basket plants this must be borne in mind. If planted out, an excess of moisture must be avoided, as this brings on mildew, almost the only enemy to which this class of plants is subject; dustings of dry sulphur on the leaves is the surest remedy.

These plants do not root freely from cuttings, but a few seeds might be left to ripen. Vigorous young specimens of all the leading sorts may be bought cheaply of nurserymen.

All the species described below are Australian.

C. angustifolium (narrow-leaved).* *fl.* orange-red; racemes axillary and terminal, many-flowered. April. *l.* lanceolate-linear, entire, with revolute edges. *h.* 1½ft. 1830. SYN. *Dillwynia glycinifolia.* (B. R. 1514.)

C. cordatum (cordate).* *fl.* red or yellow, racemose, drooping. April. *l.* sessile, cordate, obtuse, spiny-toothed. *h.* 1ft.

C. Dicksoni (Dickson's). *fl.* scarlet-yellow, axillary, solitary or in pairs, on long peduncles; vexillum large. May to September. *l.* sessile, ovate-lanceolate, mucronulate. *h.* 3ft. 1836. (P. M. B. viii. 173.)

C. diversifolium (diverse-leaved).* *fl.* orange-red; racemes many-flowered, axillary and terminal. May to July. *l.* scattered, elliptic-lanceolate, obovate, or cuneate, entire, mucronate. *h.* 2ft. 1840. SYN. *C. spectabile.* (B. R. 1841, 45.)

C. Henchmannii (Henchmann's).* *fl.* scarlet, axillary. April to June. *l.* acicular. *h.* 2ft. 1824. Plant hoary. (B. R. 986.)

C. ilicifolium (Holly-leaved). *fl.* yellow. March to October. *l.* pinnatifid-toothed, spiny, oblong-lanceolate, with an entire point longer than the teeth. *h.* 3ft. 1803.

C. i. nana (dwarf). *l.* sinuate-toothed, spiny, oblong, obtuse; bracts below the end of stalk. *h.* 9in. 1803. (B. M. 1032.)

C. rhombeum (diamond-leaved). *fl.* yellow. April and May. *l.* entire, flat, mucronate; lower ones rhomboid-orbicular; upper elliptical-lanceolate. *h.* 2ft. 1803.

C. spectabile (showy). A synonym of *C. diversifolium.*

C. varium (variable).* *fl.* yellow, red; racemes erect, many-flowered, a little longer than the leaves. June. *l.* nearly sessile, roundish-cordate, spiny-toothed and entire, downy. *h.* 4ft. 1837. (B. R. 1839, 49.) A form of this, in gardens named *Chandleri*, is also desirable.

CHRISTMAS PRIDE. *See* **Ruellia paniculata.**

CHRIST'S HAIR. *See* **Scolopendrium vulgare.**

CHRIST'S THORN. *See* **Paliurus aculeatus.**

CHRYSALIDOCARPUS (from *chrysos*, gold, and *karpos*, fruit). ORD. *Palmæ.* A monotypic genus. The species is a stove palm. For culture, *see* **Areca.**

C. lutescens (yellowish).* *fl.*, spadix shortly triangular, 1ft. or more in length; peduncles compressedly two-edged, flexuous. *l.* very long, pinnate, arched; pinnæ nearly 100, hardly opposite, lanceolate, nearly 2in. in breadth, acute, rich green on both surfaces. Caudex 4in. to 6in. in diameter, 30ft. or more in height, cylindrical, smooth, swollen at the base. Mauritius and Bourbon. An elegant but extremely rare species. SYNS. *Areca lutescens, Hyophorbe Commersoniana*, and *H. indica.*

CHRYSANTHEMUM (from *chrysos*, gold, and *anthemon*, a flower). ORD. *Compositæ.* A large and, from a garden standpoint, important genus of herbaceous or slightly shrubby plants. Pappus none, or cup-shaped; receptacle naked; involucral bracts many, imbricated, scarious on the margin. The florists' varieties of *C. sinense* alone amount to several hundreds. In determining them, the following synopsis will be found useful. (The genus *Pyrethrum* is now included under *Chrysanthemum* by the best authorities, but, for the sake of convenience, it is kept distinct in this work.)

INCURVED, RANUNCULUS-FLOWERED, or EXHIBITION: Florets strap-shaped, curving inwards. See Fig. 432.

Chrysanthemum—*continued.*

FIG. 432. INCURVED-FLOWERED CHRYSANTHEMUM.

Examples: Alfred Salter, Lady Slade, Mr. George Glenny, Mrs. G. Rundle, Queen of England, White Venus, &c.

RECURVED, or REFLEX-FLOWERED: Florets strap-shaped, curving outwards from the centre. Examples: Alma, Dr. Sharpe (see Fig. 433), Emperor of China, King of Crimsons, &c.

FIG. 433. RECURVED CHRYSANTHEMUM DR. SHARPE.

ANEMONE, or QUILLED ASTER-FLOWERED: Ray-florets strap-shaped; disk-florets tubular, densely arranged, cushion-like. Of this section, there are large and small-flowered forms. See Figs. 434 and 435. Of the former, the best examples are: Emperor, Fleur de Marie, Glück, and King of Anemones; of the latter, or small-flowered,

Chrysanthemum—*continued.*

Calliope, Jean Hachette, Madame Montels, Marie Stuart, and Miss Nightingale.

FIG. 434. LARGE ANEMONE-FLOWERED CHRYSANTHEMUM.

POMPONE SMALL REFLEXED, or CHUSAN DAISY-FLOWERED: Flowers small, numerously produced; florets for the most part reflexed, as in Bob, General Canrobert,

FIG. 435. SMALL ANEMONE-FLOWERED POMPONE CHRYSANTHEMUM.

Snowdrop, &c.; or fringed or toothed at their tips, as in Fimbriatum, Innocence, and Marabout (see Fig. 436, for which, and for Fig. 437, we are indebted to Messrs. Cannell

Chrysanthemum—*continued.*

and Sons). A fully-expanded bloom of a reflexed Pompone is shown at Fig. 437. The varieties of this description are the most numerous of the Pompone section. Another form of Pompone is also in cultivation, in which all the florets are quilled, as in Model of Perfection (see Fig. 438).

FIG. 436. FIMBRIATED POMPONE CHRYSANTHEMUM MARABOUT.

QUILLED, or PIN-FEATHERED JAPANESE: Flowers 6in. to 9in. in diameter; florets involute and tubular, or quilled, with toothed tips. The habit of the plants is tall and somewhat straggling. Examples: Meg Merrilees, Red Dragon (see Fig. 439), and Sultan.

FIG. 437. POMPONE CHRYSANTHEMUM

LARGE-FLOWERED JAPANESE: Flowers large, loose; florets long, strap-shaped. In some instances, the florets are revolute, twisted, and thread-like. There are very

Chrysanthemum—*continued.*

numerous varieties in this section. Examples: Chinaman (see Fig. 440), Fair Maid of Guernsey, James Salter, and Peter the Great.

In the select list of varieties, representatives of all the various forms of flowers in the Japanese section are included under the one heading.

FIG. 438. QUILLED POMPONE CHRYSANTHEMUM MODEL OF PERFECTION.

PROPAGATION. This may be effected by seeds, cuttings, suckers, or root divisions. The annual varieties are increased by seeds only, which should be sown in pots, in February or March, or outside. New varieties are sometimes obtained by sowing the seeds of the finer

FIG. 439. JAPANESE CHRYSANTHEMUM RED DRAGON.

sorts. When any distinct or improved form "sports" from the original stock, it may be readily perpetuated by cuttings.

Seed should be sown in February or March, preferably the former. If slightly covered over, and placed in a warm

Chrysanthemum—*continued.*

temperature, they will readily germinate. If the seedlings are pricked off at once and placed near the glass, good plants will soon be obtained. By the middle of May, they may either be planted out of doors, to prove their worth, or in pots till they flower, which will be the first year. As the cultivated varieties are now so very numerous, propagation from seed is seldom resorted to, except with the annual section.

Cuttings may be inserted at any time from October to May. The best are made of the young shoots that start from the base of the plant. Any of the tips of these will, however, root readily. A gentle bottom heat facilitates rooting; but a close pit or frame will answer without bottom heat. Cuttings should be inserted either singly in small pots, or several in a large one, in sandy soil. As soon as rooted, they should be shifted into single pots. When the plants are established in their first pots, the points should be nipped out, in order to induce a bushy and compact growth.

Suckers. These differ from the foregoing in being already rooted, or nearly so. They should be potted singly, in

FIG. 440. JAPANESE CHRYSANTHEMUM CHINAMAN.

sandy soil, and kept rather close, till new roots are formed. Suckers are preferred by many for standard plants, as they are generally stronger than cuttings, and more fitted to form a good stem. They may also be pinched, to form bush plants.

Divisions of Root or Stool. This is a quick and ready method of increasing the stock for outside culture, for which purpose it is very commonly adopted. February and March are the best time for the operation. The extent to which the plants should be divided depends on the purpose for which they are required. For outside culture, stools may be cut up into three, five, or more pieces.

GENERAL CULTIVATION. Nearly every grower has his own particular time for the insertion of cuttings. The season ranges from October to March, but November and December are the two most popular months. As soon as the cuttings are rooted, they should be potted off, and receive no check from the commencement until they have flowered. This may be said to be the very basis of the highest success in the culture of Chrysanthemums. To prevent any check, some growers insert the cuttings separately in pots, which is a very good plan, as each, under favourable conditions, is almost sure to root, and the

Chrysanthemum—*continued.*

practice involves no waste of either time or space. Whichever plan is adopted, the plants should be placed near the glass, and shifted on successively as they require, when the roots reach the side of the ball. The final shift should be given not later than the middle of July; for although it is most important to keep the roots in full vigour during the early stages of growth, it is equally or more so that they should fill the pots with roots before the flowering season arrives. In hot, dry places, an eastern or western aspect suits Chrysanthemums better than a southern one for summer quarters; but in colder neighbourhoods, a position facing south would be more suitable. Partial shade from the mid-day sun is desirable. The pots should be plunged to the rim, taking care to provide free egress for the water under them. Chrysanthemums require enormous quantities of water, though few plants sooner show the injurious effects of sour or waterlogged soil. The surface of the pots should also be mulched over, as a protection to the roots against excessive heat and drought, and also as a means of increasing the supply of nutriment. During bright weather, the plants may need watering three or four times a day, and must on no account be allowed to flag for want of it. In good soil, they seldom need much manure water until September, and then that made from cow or sheep dung is the best.

Soil. This can scarcely be too rich when the plants are strong and placed in the flowering pots. Good loam, heavy rather than light, should be used in about equal portions with rotten manure, including some cow dung. A little soot intermixed with this tends to give the leaves a dark green colour, and materially assists them. Crushed bones are sometimes used for drainage, with a large crock over the hole. These last a long time, and afford some nourishment to the plants as well; but where not obtainable, a few more crocks should be added instead. Pots of 9in. in diameter are of sufficient size to grow large plants, if the latter are well watered, and fed with liquid manure after the flowers are set. It is much preferable to adopt this plan than to use larger pots without feeding the plants, as the soil becomes exhausted in large pots before the time when the greatest nourishment is required. Useful decorative subjects may be obtained in 48-sized pots if cuttings are put in about the beginning of August, five or six in each, and are not afterwards pinched. The soil should be used as rough as possible, without sifting, and the plants potted firmly by means of hand rammers. Less manure should be given when the plants are young and are being grown on in small pots.

Training will greatly depend on the size or description of plant required. Standard specimens should be grown to the desired height before being stopped; while those intended for bush specimens should be pinched evenly, occasionally removing the points of all shoots as they grow. This must not be practised after the middle of July. The flowers also need thinning; and persons who grow for exhibition sometimes thin off all buds, except the terminal one on the shoot. By thus concentrating most or all the force of the plant into its terminal flowers, these may be grown to a very large size. Chrysanthemums readily conform to any style of training. They develop naturally into a dense bush; or may readily be grown into standards, from 3ft. to 9ft. high. For exhibition, they are sometimes severely trained, by the aid of hoops, stakes, and ties, into flat or hemispherical specimens, with the flowers laid flat on a level surface of foliage. The shoots, being fairly flexible, can be trained, when young, in any form desired. The Pompones yield most readily to flat or level training; while the Japanese are most untractable. All staking and training should be completed some weeks before the flowers appear, so that the latter may have time to readjust themselves before opening, and look more natural.

Housing and Flowering. All Chrysanthemums intended

Chrysanthemum—*continued.*

for flowering indoors should be under glass, in the autumn, before the appearance of frost. During mild weather, afterwards, they cannot be kept too open or cool; nor can the transition from the outside to the house be made too gradual and easy. Any sudden change of temperature or condition causes the leaves to become yellow; and this not only disfigures, but weakens the plants and flowers. While Chrysanthemums must never be stinted for water, less will be needed when in flower than when in full growth. They will do well in a cool greenhouse, conservatory, or window garden. Some cultivators arrange them against walls, where they are simply placed according to their height, with a temporary glass case over them; and this mode shows off the flowers remarkably well. When placed so that the merits and form of each plant may be seen, Chrysanthemums are most effective. After flowering, the plants may be cut down to within 6in. of the ground, and wintered in a cold frame, or other frost-proof quarters. Some growers, however, merely take cuttings off, and throw the old plants away; others keep the younger plants, and grow them into larger specimens the next year; while many plant them out in the open borders, or against walls, to take their chance of flowering, should season or locality prove favourable.

Outdoor Culture. As an autumnal flowering plant, success would be much more general were Chrysanthemums specially cultivated for this purpose. When they are as carefully grown in the open as in pots, they often flower almost equally well. Good results are frequently obtained by keeping them in a very open place throughout the summer, at distances of 2ft. or 3ft. apart, freely exposed to the sun and air all round; and then, towards the end of September, lifting carefully and potting them, keeping close, and shaded for a time afterwards.

C. argenteum (silver-leaved).* *fl.-heads* white. July. *l.* bipinnate, hoary; leaflets acute, entire. Stem one-headed, simple. *h.* 1ft. Levant, 1731. Hardy herbaceous perennial.

FIG. 441. CHRYSANTHEMUM CARINATUM.

Chrysanthemum—*continued.*

FIG. 442. CHRYSANTHEMUM CARINATUM BURRIDGEANUM.

FIG. 443. CHRYSANTHEMUM CARINATUM LORD BEACONSFIELD.

C. carinatum (keeled).* *fl.-heads* white, purple; scales of involucre keeled. August. *l.* bipinnate, fleshy, smooth. *h.* 2ft. Barbary, 1796. SYN. *C. tricolor*. See Fig. 441. Of this hardy annual, there are numerous varieties: BURRIDGEANUM (see Fig. 442) is an especially good one, as is also LORD BEACONSFIELD (see Fig. 443, for which we are indebted to Messrs. Cannell and Sons).

C. Catananche (Catananche). *fl.-heads* solitary, 1½in. to 2in. across, pale yellow; the rays of a purplish hue outside towards the tip, and blood-red within at the very base; disk of a darker yellow. Spring. *l.* tufted, stalked, irregularly cut into linear acute lobes. Root-stock stout, branched. *h.* 4in. to 6in. 1871. One of the most beautiful plants of the Greater Atlas. Suitable for a well-drained spot in the rockery. (B. M. 6107.)

C. coronarium (garland).* *fl.-heads* yellow. July to September. *l.* bipinnatifid, acute, broadest externally. Stem branched. *h.* 4ft. South Europe, 1629. Hardy annual. See Fig. 444. (S. F. G. 877.)

Chrysanthemum—*continued.*

FIG. 444. CHRYSANTHEMUM CORONARIUM.

FIG. 445. CHRYSANTHEMUM FRUTESCENS (MARGUERITE OR PARIS DAISIES).

C. frutescens (shrubby). Under the popular name of Paris Daisies, the flowers of this species, and others of a similar description, are very largely used for decoration. The plants also form very useful subjects for flowering in greenhouses, or in the open ground in summer. The variety ETOILE D'OR is of a pale yellow colour, and very popular. See Fig. 445, for which we are indebted to Messrs. Cannell and Sons. *See also* **Pyrethrum frutescens.**

Chrysanthemum—*continued.*

C. Leucanthemum (white-flowered). Ox-eye Daisy. *fl.-heads* white. June and July. *l.* amplexicaul, oblong, obtusely cut, pinnatifid at base; radical ones obovate petiolate. Stem erect, branched. *h.* 2ft. Britain. Perennial. (S. E. B. iii. 714.)

C. segetum (corn).* *fl.-heads* yellow. June to August. *l.* amplexicaul, glaucous, inciso-serrate above, toothed at the base. *h.* 1½ft. Britain. Annual. (Sy. En. B. iii. 713.)

FIG. 446. CHRYSANTHEMUM SEGETUM GRANDIFLORUM.

C. s. grandiflorum (large-flowered).* See Fig. 446, for which we are indebted to Messrs. Cannell and Sons.

FIG. 447. CHRYSANTHEMUM SINENSE, INCURVED VARIETY.

Chrysanthemum—*continued.*

FIG. 448. CHRYSANTHEMUM SINENSE, POMPONE VARIETY.

C. sinense (Chinese).* *fl.-heads* various; ray-florets very long. Autumn. *l.* coriaceous, stalked, sinuate-pinnatifid, toothed, glaucous. China, 1764. See Figs. 447 and 448.

C. tricolor (three-coloured). A synonym of *C. carinatum*.

VARIETIES. From the enormous number of kinds now in cultivation, we have selected the best in each class.

Incurved. ALFRED SALTER, delicate pink, very fine; ANGELINA, rich amber, shaded salmon; BARBARA, rich golden-yellow, BEVERLEY, cream-white, very broad florets; DR. BROCK, orange-red; DUCHESS OF MANCHESTER, nearly white, the back striped with rosy-carmine; EMPRESS EUGENIE, delicate rose-lilac; EMPRESS OF INDIA, pure white, very fine; EVE, pale sulphur, a most delicate and lovely shade; FAUST, crimson-purple; GENERAL BAINBRIDGE, orange-yellow, golden centre; GOLDEN BEVERLEY, rich yellow, very fine; GOLDEN EMPRESS, primrose; GOLDEN QUEEN OF ENGLAND, rich canary; GUERNSEY NUGGET, primrose, fine; HER MAJESTY, silvery-blush; JARDIN DES PLANTES, golden-yellow, very fine; JOHN SALTER, orange-red; LADY HARDINGE, rose-pink; LADY SLADE, lilac-pink, blush centre, very fine; LORD DERBY, dark purple; MR. BRUNLEES, Indian-red, tipped yellow; MR. GEORGE GLENNY, pale yellow, a magnificent variety; MRS. DIXON, rich yellow, very fine; MRS. G. RUNDLE, pure white, one of the best; MRS. HEALE, pure white; MRS. W. HALIBURTON, cream-white; PINK PERFECTION, delicate pink, very fine; PRINCE ALFRED, rose-crimson, large; QUEEN OF ENGLAND, blush, very fine; WHITE VENUS, pure white, very fine.

Recurved and Reflexed. ALMA, rose-crimson; BEAUTÉ DU NORD, violet-carmine; CHRISTINE, peach, very fine; DR. SHARPE, magenta-crimson, one of the best (see Fig. 433); EMPEROR OF CHINA, silvery-white, tipped salmon; GARIBALDI, bright red, very showy; GAZELLE, bright crimson, yellow-tipped; GOLDEN CHRISTINE, golden-buff, very fine; JULIA LAGRAVERE, velvety-crimson, very fine; KING OF CRIMSONS, rich crimson; MRS. FORSYTH, pure white; PRINCE VICTOR, dark red; PROGNE, amaranth; UNDINE, lilac, tipped blush.

Anemone-flowered. *Large*: EMPEROR, blush, sulphur centre; EMPRESS, lilac; FLEUR DE MARIE, white; GLUCK, rich yellow, fine; KING OF ANEMONES, crimson-purple, very fine; LADY MARGARET, white, very fine; MADAME GODEREAUX, cream-white, fine; M. CHATÉ, rich peach, white centre; MRS. PETHERS, rose-lilac; PRINCESS LOUISE, delicate rose-lilac; SUNFLOWER, sulphur-yellow. *Small*: ANTONIUS, canary-yellow; ASTREA, lilac; CALLIOPE, rich ruby-red; FIREFLY, bright scarlet; JEAN HACHETTE, white, yellow centre; MADAME MONTELS, white, yellow centre, very fine; MARIE STUART, lilac-blush, sulphur centre; MISS NIGHTINGALE, blush, white centre; MR. ASTIE, golden-yellow; PERLE MARGUERITE, rich rose; REGULUS, cinnamon, free.

Pompones. *Reflexed*: ADONIS, rose and purple; AURORE BOREALE, orange-brown; BOB, dark brown-crimson; CAPTAIN NEMO, amaranth, tipped with white; CRIMSON PERFECTION, bright crimson; DUPONT DE LÉURE, rich golden-yellow; ELEONORE, crimson, tipped with gold; FLORENCE, bright rose; GENERAL

Chrysanthemum—*continued.*

CANROBERT, pure yellow; GOLDEN CEDO NULLI, canary-yellow; MDLLE. MARTHE, pure white, one of the best; MODEL OF PERFECTION, rich lilac, edged white (see Fig. 438); MRS. HUTT, orange-brown; PRESIDENT, rose-carmine; WHITE CEDO NULLI, white, tipped brown. *Fringed or Toothed:* FIMBRIATUM, rose-lilac, suffused yellow; INNOCENCE, white; MARABOUT (see Fig. 436) pure white; MONS. CAMILLE, amaranth, rose-shaded; MONS. HOSTE, deep flesh; SIR RICHARD WALLACE, rose, shaded white; SOUVENIR DE JERSEY, deep rose.

Japanese. ABD-EL-KADER, deep maroon-crimson; ARLEQUIN, nankeen yellow; BARON DE PRAILLY, lilac-rose, spotted white; BEAUMONT, golden-yellow, rose-flaked at the back; BRONZE DRAGON, bronze-yellow, fine; CERES, blush-pink; CHANG, dark orange-red, with yellow back, very effective; CHINAMAN, bright violet-purple, with central silvery lines (see Fig. 440); COMTESSE DE BEAUREGARD, light rose, very fine; CRY KANG, rose-magenta, very fine; DIAMOND, bronze and orange; DR. ARDIGUIER, amaranth-crimson, marbled white; DR. MASTERS, yellow and red, gold-tipped; ELAINE, pure white; ETHEL, pure white; FAIR MAID OF GUERNSEY, pure white, very fine; FLAMBEAU, orange-crimson, reverse side yellow; FULGORE, nankeen yellow; GEORGE GORDON, vivid crimson; GLOIRE DE TOULOUSE, magenta, white centre; HIVER FLEUR, pale buff, tinted rose; JAMES SALTER, clear lilac, shaded centre, very fine; JANE SALTER, white, bordered with rose-lilac; JUPONAIS, bright deep yellow; LA CHARMEUSE, rich purple, white-tipped; LADY SELBORNE, pure white; LA NYMPHE, peach, shaded white; L'INFANTE D'ESPAGNE, pale yellow, immense; MEG MERRILEES, sulphur-white, large; M. RICHARDS LARIOS, dark rose and violet; NUIT D'HIVER, bronze, golden tips; ORACLE, deep red-crimson; PETER THE GREAT, clear lemon, large; RED DRAGON, fiery crimson, golden tips (see Fig. 439); RED GAUNTLET, dark crimson; ROSA BONHEUR, rich violet, crimson-shaded; RUBRA STRIATA, rich yellow, flaked violet and crimson; THE SULTAN, rosy-purple.

CHRYSOBACTRON (from *chrysos*, gold, and *bactron*, a wand; alluding to the handsome racemes of *C. Rossii*). ORD. *Liliaceæ*. All the species of this genus are now referred to *Bulbinella* by Bentham and Hooker. Very ornamental, but comparatively rare, hardy bulbous perennials. For culture, see **Anthericum.**

C. Hookeri (Hooker's).* *fl.* bright yellow, bisexual, nearly ½in. across, freely produced in erect racemes 3in. to 5in. long. Early summer. *l.* linear, sheathing at the base, 8in. to 12in. long, and from ½in. to 1in. broad. *h.* 1½ft. to 3ft. New Zealand, 1850. This only forms fine specimens in a deep moist soil. SYN. *Anthericum Hookeri.*

C. Rossii (Ross's). *fl.* yellow, unisexual. *h.* 2ft. to 3ft. New Zealand, 1848. A similar, but much superior, species to the above.

CHRYSOBALANEÆ. A tribe of *Rosaceæ.*

CHRYSOBALANUS (from *chrysos*, gold, and *balanos*, an acorn; in reference to the yellow fruit of some of the species). TRIBE *Chrysobalaneæ* of ORD. *Rosaceæ.* Stove or greenhouse trees, with simple leaves, and racemes or panicles of insignificant flowers. Fruit edible. Sandy loam is the best soil for this genus. The best method of propagation is by seeds, when they are procurable. Large cuttings, however, taken off at a joint, without shortening any of their leaves, will root readily if planted thinly in a pot of sand, and placed in moist heat, with a bell glass over them.

C. Icaco. Cocoa Plum. *fl.* white; panicles axillary, dichotomous. *fr.* about the size of a plum, ovate-roundish, varying much in colour, but most commonly purple, and usually covered with a kind of bloom; the skin is thin, and the pulp white, adhering firmly to the stone; the taste is sweet, with some austerity, but not unpleasant. *l.* nearly orbicular, or obovate, emarginate. *h.* 3ft. to 6ft. Florida, &c., 1752. Stove. (G. C. 1871, 586.)

FIG. 449. EARLY-FLOWERING CHRYSANTHEMUM.

Early-flowering Varieties. CHROMATELLA, golden-orange; DELPHINE CABOCHE, reddish-mauve; FRED. PELE, red-crimson; ILLUSTRATION, white, shaded; JARDIN DES PLANTES, rich yellow, also a white variety; LA PETITE MARIE, pure white; LITTLE BOB, maroon-red; MADAME C. DESGRANGE, white, with yellow centre; MADAME PICOUL, rose-purple; NANUM, blush; PRECOCITÉ, bright yellow; SOUVENIR D'UN AMI, pure white, very fine. See Fig. 449, for which we are indebted to Messrs. Cannell and Sons.

CHRYSANTHUS. Yellow-flowered.

CHRYSO. In Greek compounds, this signifies golden-yellow.

C. oblongifolius (oblong-leaved). *fl.* white; panicles terminal. May and June. *fr.* olive formed, nearly dry. *l.* oblong, or oblanceolate, a little crenulated, sometimes tomentose beneath. *h.* 1ft. Florida, &c., 1812. Greenhouse.

CHRYSOCOMA (from *chrysos*, gold, and *kome*, hair; in reference to the yellow florets). Goldy-locks. ORD

Chrysocoma—*continued.*

Compositæ. Pappus simple; receptacle naked; involucre hemispherical or broadly bell-shaped, imbricate. All the species of this genus (about eight) are ornamental, dwarf-growing, South African shrubs. The one described below (perhaps the only one in cultivation) succeeds best in sandy peat. Cuttings of half-ripened shoots root freely in sand, under a glass.

FIG. 450. CHRYSOCOMA COMA-AUREA, showing Habit and Flower-head.

C. Coma-aurea (golden hair).* *fl.-heads* yellow. June. *l.* linear, straight, smooth, decurrent at back. *h.* 2ft. Cape of Good Hope, 1731. A greenhouse evergreen. See Fig. 450. (B. M. 1972.)

C. Linosyris (Linosyris). *fl.-heads* yellow, in terminal, dense, hemispheric corymbs. *h.* 1ft. to 2ft. Northern hemisphere (Britain). Hardy perennial.

CHRYSODIUM. *See* **Acrostichum.**

CHRYSOGONUM (from *chrysos*, gold, and *gonu*, a knee or joint; the flowers are generally produced at the joints of the stem). ORD. *Compositæ.* There are some half-dozen plants referred to this genus; two are Indian, three Australian. The typical species (probably the only one in cultivation) is described below. It is a very pretty, hardy, herbaceous perennial, thriving best in a loamy soil, with the addition of a little peat and leaf mould. Propagated by dividing the roots, in spring.

C. virginianum (Virginian).* *fl.-heads* yellow; involucre about five-leaved; receptacle paleaceous; pappus a small, chaffy crown, three-toothed. May. *l.* somewhat ovate, bluntly serrated; petioles longer than the leaves. *h.* 6in. United States.

CHRYSOPHYLLUM (from *chrysos*, gold, and *phyllon*, a leaf; referring to the colour of the under side of the leaves). Star Apple. ORD. *Sapotaceæ.* Stove evergreen trees. Flowers disposed in axillary, umbellate fascicles; corolla campanulately rotate, with a five-parted, spreading limb. Fruit globose, one to ten-celled. Leaves alternate, entire. These plants are grown principally on account of their ornamental foliage, as the fruit is not produced until they have assumed a very considerable size. They require potting in sandy loam and peat, in the proportion of two parts of the former to one of the latter. An abundance of heat and moisture is needed during the growing season, but less during winter, though they must then by no means be allowed to suffer from want of water, or the result will be the loss of many leaves, and consequent disfigurement. Chrysophyllums may be increased by cuttings of small, well-ripened shoots, plunged in strong moist heat, or by seeds, when procurable.

C. argenteum (silvery-leaved). This species differs from *C. Cainito* only in the silvery under surface of the leaves. West Indies, &c.

C. Cainito (Cainito). *fl.* whitish, small. May. *fr.* large, rather depressed, rose-coloured, mixed with green and yellow; skin smooth and glabrous; flesh soft, clammy, sweet, and hispid. *l.* oblong, acute at the base and apex, 3½in. to 4in. long, quite glabrous above, but silky and rusty beneath. Branches clothed with silky rusty down. *h.* 30ft. to 50ft. West Indies, 1737.

C. macrophyllum (large-leaved).* *l.* oblong-lanceolate, 6in. to 8in. in length, and 2in. to 3in. in breadth, deep green above, densely clothed on the under side when young with rich golden, silky hairs, which gradually turn to chestnut-brown. *h.* 50ft. Sierra Leone, 1824. A rare but magnificent plant. The foliage assumes its full proportions when young.

Chrysophyllum—*continued.*

C. monopyrenum (one-stoned). *fl.* whitish, small. *fr.* shining, purplish-black, in form like a small date. *l.* alternate, oval, 4in. to 5in. long, 2in. broad. *h.* 30ft. West Indies, 1812. (B. M. 3303.)

CHRYSOPSIS (from *chrysos*, gold, and *opsis*, aspect; in allusion to the golden blossoms). ORD. *Compositæ.* Hardy, herbaceous perennials. Pappus of the ray and disk-florets similar and double; the exterior short and scale-like; the inner of long, capillary bristles. Some of the species make excellent subjects for naturalising in a shrubbery or in the rougher parts of borders. They are easily grown in common soil. Propagated by division in spring.

C. falcata (sickle-shaped). *fl.-heads* yellow, small, corymbose. August. *l.* crowded, linear, rigid, entire, somewhat recurved or scythe-shaped, sessile. *h.* 4in. to 10in. New Jersey.

C. mariana (Maryland). *fl.-heads* yellow, corymbose, on glandular peduncles. August to October. *l.* oblong. *h.* 1½ft. to 2ft. New York. Plant silky with long and weak hairs, or, when old, smoothish.

C. trichophylla (hairy-leaved). *fl.-heads* yellow. June. *l.* narrow-oblong, sub-acute, hairy. Stem slender, 1ft. to 3ft. high. South United States, 1827.

C. villosa (villous). *fl.-heads* yellow. July to September. *l.* narrowly oblong, hoary with rough pubescence (as is also the involucre), bristly-ciliate towards the base. Stem corymbosely branched, the branches terminated by single, short-peduncled heads. North America.

CHRYSOSPLENIUM (from *chrysos*, gold, and *splen*, the spleen; in reference to the golden colour of the flowers, and the supposed virtue of the plant in diseases of the spleen). Golden Saxifrage. ORD. *Saxifrageæ.* Hardy, perennial herbs. Flowers yellow, somewhat corymbose. Leaves thickish, simple, petiolate, toothed. The two native species, *alternifolium* and *oppositifolium*, are not very showy plants, but constitute pretty ornaments for damp, boggy places. They grow about 6in. high and are very easily progagated by divisions.

CHRYSOSTEMMA TRIPTERIS. *See* **Coreopsis tripteris.**

CHRYSOXYLON. A synonym of **Pogonopus** (which *see*).

CHRYSURUS. A synonym of **Lamarckia** (which *see*).

CHYMOCARPUS PENTAPHYLLUS. *See* **Tropæolum pentaphyllum.**

FIG. 451. CHYSIS BRACTESCENS.

CHYSIS (from *chysis*, melting; in reference to the fused appearance of the pollen masses). ORD. *Orchideæ.* A small but beautiful genus of stove, deciduous epiphytes. Flowers very showy, colours bright, texture firm, and the surface even and waxy; lip beautifully marked. Pseudo-

Chysis—continued.

bulbs thick, fleshy, brittle, about 1ft. long, producing their flowers with the young growth. For culture, *see* **Vanda**.

Chysis—*continued.*

short spike or raceme; sepals and petals white; lip three-lobed, saddle-shaped, with a yellow blotch in the centre. April and May. *l.* oblong, acute. Guatemala, 1840. See Fig. 451. (B. M. 5186.)

FIG. 452. CHYSIS CHELSONI.

C. aurea (golden).* *fl.* yellow, disposed in a short spike; produced at different times of the year; lip marked with crimson. Venezuela, 1834. (B. R. 1937.)

C. a. Lemminghei (Lemminghe's).* A charming variety, with delicate pink and rose-coloured flowers, which are freely produced in May or June. Guatemala. (W. S. O. 34.)

C. bractescens (bracteate).* *fl.* 2in. to 3in. across, disposed in a

C. chelsoni (Chelsea). *fl.*, sepals and petals nankeen yellow, with a large rosy blotch at the apex; lip bright yellow, with red spots and markings. A charming hybrid between *C. bractescens* and *C. aurea*. See Fig. 452, for which we are indebted to Messrs. Veitch and Sons.

C. lævis (smooth).* *fl.* disposed in pendulous spikes of eight or more; sepals and petals yellow and orange; lip blotched with

Chysis—*continued.*

scarlet or crimson, and fringed round the margin. June. Pseudo-bulbs 15in. long. Guatemala. (I. H. 1863, 365.)

CIBOTIUM. *See* **Dicksonia.**

CICCA (named after Peter Cicca, a writer of the sixteenth century). ORD. *Euphorbiaceæ.* A small genus, now usually referred to *Phyllanthus.* The best-known species is *C. disticha*, which is a stove evergreen fruit-tree. It thrives well in sandy loam; and cuttings of ripe shoots will root in sand, if placed under a glass, and in bottom heat.

C. disticha (two-ranked). *fl.* greenish; racemes lateral. *l.* oblong. *h.* 10ft. India, 1796.

CICHORIUM (an ancient Egyptian name). Chicory or Succory. ORD. *Compositæ.* Hardy salad plants. Involucre surrounded with small scales or smaller leaflets; receptacle naked or slightly hairy; pappus sessile, scaly, shorter than the pericarp. For special culture, *see* **Chicory** and **Endive.**

C. Endivia. Endive. *fl.-heads* pale blue, 1in. to 1½in. across; peduncles axillary. *l.* large, sinuate, smooth, toothed. July. *h.* 2ft. China, &c. Annual.

C. Intybus (Intybus). Chicory. *fl.-heads* bright blue, axillary, sessile, 1in. to 1½in. across, growing two or three together on the panicle branches. July. *l.* glandular-ciliated; lower ones oblanceolate, runcinate-pinnatifid or dentate; upper stem ones lanceolate, half stem-clasping, broadly toothed or entire. *h.* 2ft. to 5ft. Europe (Britain). Perennial. (Sy. En. B. 786.)

C. spinosum (spiny). *fl.-heads* blue; involucre ovate, imbricated; receptacle naked; peduncles rigid, glabrous. *l.* green, sub-succulent, glabrous, runcinate-lyrate; terminal lobe oblong, obtuse. Stem branched, divaricate; branches ending in a spine. Greece. Biennial. (S. F. G. 823.)

CICONIUM. Included under **Pelargonium** (which *see*).

CIENKOWSKIA (named in honour of Professor L. Cienkowsky, a Russian botanist of the present century). ORD. *Scitamineæ.* A handsome stove herbaceous perennial, now referred to genus **Kæmpferia,** which *see* for cultivation.

C. Kirkii (Kirk's). *fl.* lovely pale rose-purple, about 3in. in diameter, sweet-scented; scape slender, erect, 3in. to 4in. long. August. *l.* elliptic-lanceolate, 6in. to 8in. long by 2½in. to 3½in. wide. *h.* 6in. Zanzibar, 1872. (B. M. 5994.)

CILIÆ. Marginal hairs, forming a fringe.

CILIARIA. Included under **Saxifraga** (which *see*).

CILIATE. Fringed with hairs.

CIMICIFUGA (from *cimex*, a bug, and *fugo*, to drive away; indicating certain virtues which the plants—particularly *C. elata*—possess). Bugwort. ORD. *Ranunculaceæ.* Ornamental hardy herbaceous perennials, allied to *Actæa.* They are of easy culture in ordinary garden soil. A somewhat moist and shady situation is preferable. All are easily propagated by division of the roots, in spring; or by seeds, sown in a cold frame as soon as ripe.

C. americana (American).* *fl.* whitish; racemes panicled. August and September. *l.* tripinnate. *h.* 2ft. to 3ft. Carolina, 1824.

C. cordifolia (heart-shaped-leaved). *fl.* whitish; racemes panicled. July and August. *l.* biternate; leaflets four or five-lobed, serrated, cordate at the base. *h.* 2ft. to 3ft. North America, 1812. (B. M. 2069.)

C. elata (tall). *fl.* whitish; racemes panicled. June and July. *l.* ternate or biternate; leaflets ovate-oblong, deeply toothed. *h.* 2ft. Eastern Siberia, North America, &c., 1777. A fœtid herb, used in Siberia for driving away bugs. SYN. *C. fœtida.*

C. fœtida (fœtid). A synonym of *C. elata.*

C. japonica (Japanese).* *fl.* white, sessile; spikes very long. *l.* large, ternate, with five or seven-lobed cordate segments. *h.* 3ft. Japan, 1879.

C. racemosa (racemose).* *fl.* white; racemes compound, very long. July and August. *l.* triternate, with serrated or, rather, cut leaflets. *h.* 3ft. to 5ft. North America, 1732. This species

Cimicifuga—*continued.*

resembles *Actæa spicata*, but is much larger. SYN. *Actæa racemosa* and *C. serpentaria.* (R. G. 443.)

C. serpentaria (snake-like). A synonym of *C. racemosa.*

CINCHONA (named after Countess de Chinchon, wife of a Governor of Peru, who was cured of a fever in 1638 by this remedy). Peruvian Bark. ORD. *Rubiaceæ.* South American trees, from which various kinds of Peruvian bark are obtained. Flowers white or reddish; inflorescence panicled. Leaves on stout petioles, with flat margins; stipules ovate or oblong, foliaceous, free, deciduous. These greenhouse evergreens are of the utmost importance, medicinally, and for this purpose their culture is of primary importance in India and many other tropical countries. They are rarely grown in this country, not being particularly ornamental. The best compost is a mixture of turfy loam and fibry peat, with a little sand and charcoal. Cuttings should be taken off when ripe, and planted in a pot of sand, which should be plunged, under a hand glass, in a moist heat.

C. Calisaya. Calisaya Bark. *fl.* pink. *l.* oval-oblong, shortly acuminate. *h.* 30ft. to 40ft. Andes of Peru.

C. lanceolata (lanceolate). A synonym of *C. officinalis.*

C. officinalis (officinal). *fl.* very pale rose-colour, supported on pedicels, which are powdered and silky, as well as the calyx; the tube of the corolla is silky, and the border white and woolly above; panicle bracteate, much branched, smooth. *l.* oval-lanceolate, acute, naked on both surfaces, as well as the branches, shining. *h.* 30ft. to 40ft. Peru. SYN. *C. lanceolata.*

Among other species of this genus are: *condaminea*, *cordifolia*, *microphylla*, *nitida*, and *scabra.*

CINCHONACEÆ. Included under *Rubiaceæ.*

CINCINALIS. *See* **Nothochlæna.**

FIG. 453. FLOWERING BRANCH OF SINGLE-FLOWERED CINERARIA.

CINERARIA (from *cinerea*, ash-coloured; alluding to the grey down covering the surfaces of the leaves). ORD. *Compositæ.* An extensive genus of mostly herbaceous plants. Pappus pilose; receptacle naked; involucre campanulate, of many equal sides. Several of the hardy species are excellent plants for the herbaceous borders,

Cineraria—*continued.*

and may be easily grown in any ordinary garden soil. They may be propagated by divisions of the roots; or, better, by seed, sown in a cold frame or cool house, in spring. The florist's varieties which have originated from *C. cruenta* are among the most ornamental and useful plants that can be grown for greenhouse or conservatory decoration (see Fig. 453). As a packet of seed will produce a great variety of colours, including all shades of blue, and the plants are of tolerably easy culture, and do not require much heat, they should be grown by every one possessing a house where frost is excluded during winter. Named sorts must be propagated by division of the roots; but, as seedlings are more vigorous, and those of a good strain equal to many named kinds, the general plan is to sow in succession annually, and when the plants have flowered, throw them away. They are best grown in pits or frames, until frost sets in, and then removed to a light, airy position in the greenhouse, for winter blooming.

FIG. 454. CINERARIA CRUENTA WEBBERIANA.

Seed should be sown under glass, those intended for autumn flowering in April and May, those for spring in July and August. Some light leaf mould should be sifted, and about an equal quantity of fresh sifted loam and sharp sand added; the whole being well mixed. After having drained the pans or pots, and placed some of the rough siftings over the crocks, fill up with fine soil, pressing tolerably firm, and afterwards finishing with a smooth surface on which to sow the seed. This should be scattered thinly and regularly over the surface, and very slightly covered with some more of the sifted mixture, afterwards watering it carefully with a fine-rosed can. The pans may be covered with sheets of glass, and placed in a shady position in the greenhouse or cold frame. The glass should be tilted when the young plants appear, and finally removed, to afford requisite light and air.

Cineraria—*continued.*

When the seedlings are large enough to handle, they should be placed separately in small pots, or pricked off in other pans. They should be kept rather close for a time after potting, to encourage root action, but must not be exposed to much heat at any time. The best place for them in summer is an ordinary garden frame, or cold pit, facing north. They delight in plenty of atmospheric moisture and a cool bottom, such as that afforded by a layer of coal ashes.

After Cultivation. As the plants progress, they should be shifted on in suitable sizes until placed in the flowering pots, as anything like starvation in the younger stages of growth is very detrimental to their well-being afterwards. Small decorative plants may be flowered in 5in. pots; but for larger specimens, those of 7in. or 8in. in diameter are required. The final shift must be determined at the outset, and the smaller-sized pots selected so as to give about an equal amount of soil each time. A much richer and rougher compost may now be employed, consisting of about half loam, with an addition of equal parts of leaf soil and tolerably dry cow manure. The plants must be again placed on ashes in a cool frame, and plenty of air admitted in mild weather, at the same time avoiding draughts, which are very injurious. Cinerarias like plenty of water at the roots at all times, and frequent syringings in summer and autumn. A thin shading will be required in bright weather, as the plants will not bear exposure to sun; it should not, however, be permanent, or sufficiently thick to exclude light. The plants soon become weak and drawn in a dry atmosphere, consequently only enough fire heat should be applied, even in winter, to exclude frost. The spring-sown plants will flower in autumn and early winter; but those sown in July or August, and grown on during winter, to flower the following spring, are invariably of the best quality. Named varieties that are to be perpetuated by cuttings, should be cut down after flowering, and be afterwards propagated by division.

FIG. 455. CINERARIA MARITIMA.

Insects, &c. Cinerarias are especially liable, in all stages of their growth, to the attacks of green fly. The frames should be fumigated frequently, but not strongly, with tobacco paper, as, although the fly may not be detected at first, the plants may be infested underneath the young leaves. Fumigation is a certain cure, but is best used as a preventative. Red spider is sometimes troublesome, but this is a sign of insufficient moisture, and the remedy is of course suggested. Mildew is often caused by draughts, or a confined, close atmosphere. The affected parts should be dusted with flowers of sulphur.

Cineraria—*continued.*

Double-flowered Cinerarias. These are similar in growth to the single varieties, but have their flowers quite double, like miniature rosettes. Seeds are not produced in anything like the quantity obtained from single ones, and the varieties cannot be depended upon to reproduce themselves true from seed. Neither will any more than a proportion of double-flowered plants be guaranteed. This entails the necessity of perpetuating any variety by cuttings, which is, with many of them, a very slow process. Although useful for buttonhole and other bouquets, and for cut-

Cineraria—*continued.*

flower purposes, this section will probably never supersede the single-flowered one for beauty and general utility. All Cinerarias are benefited by applications of manure water, from the time the flower-heads are formed until they open.

FIG. 456. FLOWERS OF DOUBLE CINERARIA MR. THOMAS LLOYD.

C. alpestris (alpine). *fl.-heads* yellow, corymbose. June. *l.* pinnate; terminal pinnæ large, cordate, cut-toothed; lateral ones cuneate, toothed at the end. *h.* 2ft. South and Eastern Europe, 1683. Hardy herbaceous perennial.

C. aurantiaca (orange-coloured).* *fl.-heads* orange, corymbose. May. *l.*, radical ones elliptic, repandly toothed; stem ones

Cineraria—*continued.*

lanceolate, entire. Stem simple, rather woolly. South and Eastern Europe, 1819. Hardy perennial. (S. B. F. G. iii. 256.)

C. cruenta (purple-leaved).* *fl.-heads* reddish-purple, cymose. Spring and summer. *l.*, radical ones cordate lobed, purplish beneath; cauline ones sessile, ovate, auricled at base. *h.* 2ft. Canary Islands, 1777. Greenhouse perennial. (B. M. 406.)

C. c. Webberiana (Webber's). This is a garden hybrid, with bright blue flower-heads, raised in 1842. At the present time, it would be regarded as very inferior. The ray-florets are too narrow to allow it to be placed in a selection of florists' varieties, judged by the now accepted standard. See Fig. 454.

C. geifolia (Geum-leaved). *fl.-heads* yellow; peduncle branched. April to August. *l.* long-stalked, reniform, narrowed, somewhat lobed, downy; petioles auricled at end. *h.* 2ft. Cape of Good Hope, 1710. Greenhouse evergreen shrub.

C. lobata (lobed). *fl.-heads* yellow, sub-corymbose; involucre calyculate. June. *l.* roundish, many-lobed, smooth; petioles auricled at base. *h.* 3ft. Cape of Good Hope, 1774. Greenhouse evergreen.

C. longifolia (long-leaved). *fl.-heads* yellow, in corymbose umbels. July. *l.* somewhat toothed; radical ones spathulate; cauline ones oblong-lanceolate. Stem simple. *h.* 2ft. South and Eastern Europe, 1792. Hardy perennial.

C. maritima (sea).* *fl.-heads* yellow, panicled; involucre downy. July to September. *l.* pinnatifid; segments blunt, about three-lobed, silvery, downy beneath. *h.* 2ft. South Europe, 1633. Hardy evergreen. See Fig. 455. (S. F. G. 871.)

Varieties. The single varieties being so exclusively grown from mixed seed, it is hardly desirable to give a selection of named kinds. These are most important to the seed raiser only, to constitute and fix his strain. A list of the most desirable double-flowered kinds is appended:

ADA, deep blue, very full; KATE, pure white, tinted with pink, of excellent form; MARY, light magenta-rose; MR. THOMAS LLOYD, deep blue-purple, tipped with lake, very double and floriferous (see Fig. 456); ROSSINA, carmine, very double; SOPHIA, rich magenta, very large and full. Additional new ones are: ECLIPSE, JUNO, LILACINA, MR. R. H. VERTGANS, ROSETTA, ROSY GEM, ROYAL PURPLE, and STANSTEAD RIVAL.

CINEREOUS. Ash-coloured, grey.

CINNAMODENDRON (compounded from *Cinnamomum*, Cinnamon, and *dendron*, a tree; resembling a Cinnamon-tree). ORD. *Canellaceæ.*

C. corticosum (barky). *fl.* red. *h.* 50ft. West Indies, 1860. This is a stove tree, the bark of which is employed as an aromatic stimulant to purgatives and tonics. It requires cultivation similar to that recommended for *Canella*, to which the present genus is allied. (B. M. 6120.)

CINNAMOMUM (from *Kinnamomon*, the Greek name used by Theophrastus, from the Arabic name *Kinamon*). Cinnamon. ORD. *Laurineæ.* Stove evergreen trees, from some of which the Cassia and Cinnamon barks are obtained. They thrive in a compost of peat and loam. Cuttings of fine shoots will root, in April, if planted in sand, under a hand glass, and plunged in a moist bottom heat. This genus contains many species of great economic value; few of them are grown for any beauty which they may possess. Some of the species are: *aromaticus*, *Cassia* (Bastard Cinnamon), *Culilawan*, *dulce*, *Malabathrum*, *montanum*, *nitidum*, *obtusifolium*, and *verum*.

CINQUEFOIL. *See* **Potentilla.**

CIONIDIUM. *See* **Deparia.**

CIPURA (derivation unexplained). ORD. *Irideæ.* A very small genus of greenhouse bulbous plants. Flowers in terminal heads; perianth with a very short tube and a six-parted limb; inner segments much the smaller. Leaves ensiform. They thrive in a compost of sandy loam, peat, and leaf mould. It is desirable to keep them moderately dry through the winter, and to repot in spring. Propagated by seed, which should be sown in a slight heat, in spring; or by offsets, which are produced in abundance.

C. paludosa (marsh). *fl.* white, on a short, densely imbricated, terminal spike. July. *l.* radical, linear-lanceolate, plaited, 3in. to 5in. long, longer than the scape. Bulbs conico-globose. *h.* 1ft. Guiana, 1752. (B. M. 646, under the name of *Marica paludosa*.)

CIRCÆA (mythological name, after Circe, the famous enchantress). Enchanter's Nightshade. ORD. *Onagrarieæ.*

Circæa—*continued.*

Pretty herbaceous plants. Flowers in terminal and lateral racemes, covered with uncinate hairs. Leaves opposite, stalked, toothed. Roots creeping. They are of the easiest possible culture, and will grow under almost any conditions. Propagated readily by the running roots.

C. alpina (alpine). *fl.* pale red. July. *l.* cordate, toothed, shining, with winged petioles, membranous. Stems ascending, smoothish. *h.* 4in. to 6in. Northern hemisphere (Britain). (Sy. En. B. 512.) *C. intermedia* is a form of this species.

C. lutetiana (Parisian). *fl.* pale red. June. *l.* ovate, acuminated, toothed, opaque, and downy, longer than the petioles. Stem erect, pubescent. *h.* 1ft. to 1½ft. Northern hemisphere (Britain). (Sy. En. B. 511.)

CIRCINATE. Curled round like a crook; like the young fronds of ferns.

CIRRHÆA (the part of the flower called the rostellum is prolonged in the form of a small tendril or *cirrhus*). ORD. *Orchideæ.* An interesting genus of stove orchids (about six species are known), not remarkable for any particular beauty, and, consequently, rarely seen in cultivation. The flowers of this genus are numerously produced on long pendulous racemes, springing from the base of the pseudo-bulbs. When grown in pots, the spikes of these pretty, fragrant flowers hang down all round the sides, and present a very neat and effective appearance. For culture, *see* **Cymbidium.**

C. Loddigesii (Loddiges').* *fl.*, sepals greenish-yellow, striped across with dark red, and spotted; petals the same colour, without stripes; lip similarly coloured, but curiously formed. May. Brazil, 1827. (B. R. 1538.)

C. tristis (dull-coloured-flowered). *fl.*, sepals and petals dark-coloured, almost purple, tinged with blood-colour and greenish-yellow, very fragrant; lip purple. June. *h.* 9in. Mexico, 1834. (B. R. 1889.)

CIRRHIFEROUS. Bearing tendrils or claspers.

CIRRHOPETALUM (from *cirrhus*, a tendril, and *petalon*, a flower-leaf; in reference to the strap-shaped petals). SYN. *Ephippium.* ORD. *Orchideæ.* In this somewhat extensive genus (about thirty species are known, but few are in cultivation) we have both very beautiful and equally curious species. They are closely allied to *Bulbophyllum*, from which genus, however, they may be distinguished by having their lateral sepals very much lengthened out. It is this peculiar elongation which gives them their distinctive appearance and peculiar charm. They are stove epiphytes, with roundish pseudo-bulbs, from the top of which proceeds a single fleshy leaf. Cirrhopetalums should be grown in baskets, or upon blocks of wood, suspended from the roof, in such a situation that they can receive a goodly share of sun, air, and light. They enjoy a plentiful supply of water during the summer months, and, even during winter, anything like drying-off should be carefully avoided, although, as a matter of course, much less water will be required. In syringing, care must be taken to avoid sprinkling the blooms. When the plants are in flower, they will need shading from the sun's rays.

C. auratum (gold-edged).* *fl.* straw-colour, stained and striped with crimson and gold; scape produced from the base of the pseudo-bulb, very slender, bearing a crown or circular umbel of delicate blossoms. Spring. *l.* solitary, oblong, convex, coriaceous, deep green above, but wholly purplish-red on the under side. Pseudo-bulbs small, oval. Manilla, 1840. Rare and elegant. (B. R. 29, 61.)

C. chinensis (Chinese). *fl.* large; upper sepals and petals purple; lateral sepals yellowish. China, 1840. A very curious species. (B. R. 29, 49.)

C. Cumingii (Cuming's).* *fl.* rich reddish-purple, produced in great profusion, at various times of the year, and disposed in large, regular, circular umbels; lateral sepals extremely peculiar, 1in. long, linear, oblong, acuminate, projecting forward, and having a peculiar twist at the base, which brings the outsides of these two sepals on the same plane, their inner edges meeting together, like the elytra, or wing cases, of some insects of the Buprestis kind. Philippines, 1839. A charming species, but still rare. (B. M. 4996.)

C. flagelliforme (whip-formed). A synonym of *C. Pahudii.*

C. Medusæ (Medusa's).* *fl.* pale straw-coloured, dotted with pink, in dense heads, on an erect scape; two of the three sepals

Cirrhopetalum—*continued.*

lengthened into thread-like points, 4in. or 5in. in length. Summer. *l.* solitary, oblong, emarginate, coriaceous, deep green. Pseudo-bulbs ovate, somewhat four-angled. Singapore, 1839. (B. M. 4977.)

C. Pahudii (Pahud's). *fl.* reddish-brown, with bright red dots, disposed in a large umbel; sepals and petals turned back. *l.* dark green. Java, 1866. A very curious and interesting species. SYN. *C. flagelliforme.*

C. Thouarsii (Thouars's).* *fl.* produced in umbels on the apex of the slender scape; the long strap-shaped sepals are of a tawny orange colour, whilst the remainder of the flower is yellow, dotted with red. Summer. *l.* solitary, oblong, obtuse, dark green, coriaceous. Pseudo-bulbs smooth, produced from a creeping rhizome or stem. Java, Manilla, &c. (B. M. 4237.)

C. tripudians (dancing).* *fl.* brown, purplish-white, disposed in a nodding raceme of nine or ten blooms. Burmah, 1876. This is described as a rather modest, but pretty, plant.

CIRRHOSE. Tendrilled; having tendrils or claspers, as the Pea.

CIRSIUM. *See* **Cnicus.**

CISSAMPELOS (from *Kissos*, the Greek name of Ivy, and *Ampelos*, a Vine; the plants resembling Ivy in their rambling habit, and the Vine in having the fruit in racemes). Pareira Brava Root. ORD. *Menispermaceæ.* Stove climbing shrubs. Racemes axillary; male ones often trichotomously branched, somewhat corymbose, solitary, twin or in threes, bearing many flowers at the top of the pedicels; female racemes simple, elongated, bearing broad alternate bracts. Leaves simple, stalked, orbicular, ovate, heart-shaped or peltate, mucronulate at the apex. These plants grow freely in fibrous loam. Cuttings root readily, with a hand glass placed over them, in heat. The majority of the species require a great deal of room to spread, before they arrive at a flowering stage.

C. mauritiana (Mauritian).* *fl.* yellow, green; male racemes axillary, in pairs or numerous. *l.* cordate-orbicular, pubescent-villous; those of the male plants peltate. Branches hispid. Mauritius, 1820.

C. Pareira (Pareira). Caapeba. *fl.* greenish; female racemes longer than the leaves. July. *l.* peltate, somewhat cordate, ovate-orbicular; under surface silky-pubescent. Branches smooth. Martinico, Jamaica, &c., 1733. (B. M. Pl. 15.)

There are about a score other species.

CISSUS (from *Kissos*, Ivy; in reference to the habit). ORD. *Ampelideæ.* This genus is now generally merged into *Vitis.* Climbing plants, with cymes or corymbs of small greenish, yellow, or purplish flowers, and simple, trifoliate, or palmate leaves.

As a roof climber, or bracket or trellis plant, *C. discolor* is universally admired. Two parts turfy peat, and one of loam and leaf mould, with a fair proportion of gritty sand, suits it well, either for basket or pot culture, or for planting out. Of course, in the latter case, the soil used will be coarser, and the drainage must be more ample. It thrives well in large pots; but for a fine growth over lofty roof girders or arches, or up pillars, it is best planted out. It luxuriates in bottom heat, displaying an unusual size and colour of leaf when growing freely in a surface temperature of 70deg., and a bottom heat of 80deg. Still, it also grows and colours well without bottom heat, and in the usual temperature of the plant stove. Propagation is easily effected by cuttings; more so in the spring than at any other season. There are, then, two modes of rooting. One consists in choosing the weakly shoots that are pruned just before the plants break into new growth. The other plan is even more successful: allow the young shoots to grow to a length of about 2in.; then cut them off, with a small piece of the base branch adhering to the young wood; or the shoots may be cut off with one or several of these young branchlets on them. Cut the old branch through at the base of each young one, and insert the cuttings with this heel of old wood entire. Very sandy soil or pure sand should be used for them. The cuttings should be plunged in a sharp bottom heat, in a close frame. They strike all the sooner if protected with bell glasses. Pot off so soon as rooted, and push on in a temperature of 70deg. to 80deg. When the plants are in full growth, and making long and

Cissus—*continued.*

strong shoots, they will be greatly benefited by the application of a little manure water. Great care must, however, be taken to use only a very weak solution; otherwise, instead of assisting the plants, it will prove very detrimental to them.

C. discolor (various-coloured).* *fl.* greenish-yellow; cymes somewhat quinquefid, shorter than the leaves. August. *l.* cordate-oblong, acuminated, the edges furnished with bristly serratures; upper surface of a bright velvety-green, spotted or mottled with white; under side of a deep reddish-purple; both surfaces, as well as the angular branches, smooth. Java, 1854. (B. M. 4763.)

C. porphyrophyllus (purple-leaved). A synonym of *Piper porphyrophylla.*

CISTERNS. These may be made of galvanised iron or slate, when required to be movable or only of a moderate size. As permanent reservoirs for water, Cisterns are generally constructed with stone or brick, and coated inside with cement. The superior value of rain water over any other for plant cultivation and garden purposes generally, is unfortunately often overlooked when building glass houses, as it is frequently conducted to drains when accommodation for its reception should be provided in the shape of Cisterns. These can be placed above or below ground, either inside or adjoining the houses, and, in addition, should be provided with means of supply from another source when rain water fails. An overflow pipe should be attached, and, if practicable, arranged so as to unscrew and open a passage at the bottom, to allow of the Cistern being cleaned out. Iron Cisterns require galvanising in all cases, as this prevents the iron causing rust or otherwise affecting the water. Almost all sizes may be purchased ready for use, and are well adapted for placing in houses where permanent ones are not constructed, so that water may stand and become warmed before being applied to the plants. Cold water is very injurious to plants growing in a warm temperature; hence the necessity for Cisterns of some sort, placed near or over hot-water pipes if possible, and kept filled with water ready for use. Where hard water has, of necessity, to be used for pot plants outside in summer, it may be materially softened by being placed in large open Cisterns, and exposed for a time to the air. Cisterns may also be used successfully for cultivating, on a small scale, tropical or hardy water plants. In connection with a heating apparatus, the cold-water Cistern should, in all cases, be placed at least a few feet above the highest point of the pipes it has to supply. The size of Cistern for this purpose is immaterial, the important part being to keep it filled with water.

CISTINEÆ. An order of often viscid shrubs or herbaceous plants. Flowers showy, with five, or rarely three, petals, which are very fugacious, usually lasting only a day. Leaves entire, simple. The two best-known genera are *Cistus* and *Helianthemum.*

CISTUS (from *kiste*, a box or capsule; alluding to the remarkable shape of the capsules). Gum Cistus; Rock Rose. ORD. *Cistineæ.* Elegant erect shrubs or sub-shrubs. Flowers large, handsome, resembling a *single* Rose, but ephemeral in character; peduncles axillary, one or many-flowered. Leaves opposite, exstipulate, entire, or somewhat toothed. Without exception, this genus is a most charming one, and ought to be represented in every garden; but, unfortunately, the species will only thrive happily in warm, sheltered positions. The texture of the flowers is very delicate; their colours are distinct and rich, and they are borne with great profusion during summer. In cold localities, they should be planted at the foot of a wall with a southern aspect. Propagation may be effected by seeds or cuttings, under hand glasses outside, or inside with a gentle bottom heat; but seedlings always make the best plants. The seeds should be sown early in spring, in pans or boxes, in a frame, and lightly covered with sifted sandy mould. The seedlings will come up without

Cistus—*continued.*

artificial heat in about six weeks. When the plants are somewhat advanced, they should be gradually hardened off. Great care must, however, be taken to shade them from too much sunshine, and to keep them regularly watered. When they are about 1in. high, they may be transferred to small pots; this shift enables them to be placed in a frame to re-establish. A few plants should be kept in the frame during the winter, and removed out of doors in spring, when the weather becomes mild and genial. In all cases, a slight protection from frost will reduce the chances of their being destroyed by an extra severe winter. Cuttings should be made from 3in. to 4in. in length; they may be struck in spring or autumn, in sandy peat, under glass, shade and water being given until roots are formed. The plants should then be potted off singly into a compost of rich loam and leaf mould, and finally planted out; but it is always advisable to reserve duplicates in pots for winter protection, so as to be able to replace in the event of loss.

Many of the names here given simply represent varying forms of a few species. As, however, they are distinct for gardening purposes, they are mentioned under the names by which they are known in horticultural works.

FIG. 457. FLOWERING BRANCH OF CISTUS LADANIFERUS MACULATUS.

C. albidus (white).* *fl.* three to eight, terminal, somewhat umbellate; petals pale purple, yellow at the base, imbricate. June. *l.* sessile, oblong-elliptical, hoary-tomentose, somewhat three-nerved. *h.* 2ft. South-western Europe, 1640. (S. C. 31.)

C. candidissimus (whitest). *fl.* pale rose-coloured; peduncles one to eight-flowered, shorter than the leaves. June. *l.* ovate-elliptical, acute, densely clothed with hoary tomentum, three-nerved; footstalks short and sheathing at the base, with pilose margins. *h.* 4ft. Grand Canary Islands, 1817. SYN. *Rhodocistus Berthelotianus.* (S. C. 3.)

C. Clusii (Clusius's). *fl.* white, somewhat capitate, July. *l.* somewhat three-nerved, linear, with revolute margins; under surface canescent; bracts pilose, broadly ovate, acuminate, ciliate, caducous, rather longer than the peduncles. *h.* 2ft. Spain and Portugal, 1810. (S. C. 32.)

C. creticus (Cretan). *fl.*, petals purple, yellow at the base, imbricate; sepals villous; peduncles one-flowered. June. *l.* spathulate-ovate, tomentosely-hairy, wrinkled, drawn out along the short footstalk, and waved on the margin. *h.* 2ft. Crete, 1731. (S. F. G. 435.) This, and some other species in the Levant, yield labdanum, a resin which was largely used as a medicine during the prevalence of the Plague. It is collected by whipping the plants with long thongs attached to a rake-like frame, the resin

Cistus—*continued.*

adhering to the straps. At the present time, it is principally used as a perfume in Turkey.

C. crispus (curled).* *fl.* almost sessile, three or four together, somewhat umbellate; petals red-purple. June. *l.* sessile, linear-lanceolate, undulately-curled, three-nerved, wrinkled, pubescent. *h.* 2ft. South-western Europe, 1656. (S. C. 22.)

C. Cupanianus (Cupani's). *fl.* white, with a spot of yellow at the base of each petal; peduncles pilose, two to three-flowered; petals imbricated; sepals villous. June. *l.* stalked, cordate-ovate, wrinkled, reticulately-veined; upper surface scabrous; under surface covered with fascicled hairs; margin fringed. Stem erect. *h.* 2ft. Sicily. (S. C. 70.)

C. cyprius (Cyprus). *fl.*, petals white, with a dark spot at the base, imbricated; peduncles generally many-flowered. June. *l.* stalked, oblong-lanceolate; upper surface glabrous; under surface clothed with hoary tomentum. *h.* 4ft. Cyprus, 1800. (S. C. 39.)

C. formosus. *See* **Helianthemum formosum.**

C. heterophyllus (various-leaved).* *fl.*, corolla red, yellow at the base, large; petals imbricate; peduncles hairy, leafy, one-flowered, one to three together. June. *l.* ovate-lanceolate, on short footstalks, which are sheathing at the base; margins revolute. *h.* 2ft. Algiers. (S. C. 6.)

C. hirsutus (hairy).* *fl.*, petals white, with a yellow mark at the base of each, imbricate; peduncles short, one-flowered, or cymose, many-flowered. June. *l.* sessile, oblong, blunt and hairy. *h.* 2ft. South-west Europe, 1656. (S. C. 19.)

C. incanus (hoary). A synonym of *C. villosus.*

C. ladaniferus (labdanum-bearing).* Gum Cistus. *fl.* white, large, terminal, solitary; petals imbricate. June. *l.* almost sessile, connate at the base, linear-lanceolate, three-nerved; upper surface glabrous; under surface tomentose. *h.* 4ft. Spain, 1629. (S. C. 84.) At one time, it was believed that this species furnished the labdanum of commerce.

C. l. maculatus (spotted).* *fl.*, petals white, each marked near the base with a dark blood-coloured spot. See Fig. 457. (S. C. 1.)

C. latifolius (broad-leaved).* *fl.*, petals white, with a yellow spot at the base of each, imbricated; sepals villous; peduncles bracteate, long, somewhat cymose, pilose. May. *l.* stalked, broad, cordate, acute, with curled, waved, denticulated, ciliated margins. *h.* 3ft. Barbary, 1656. (S. C. 15.)

C. laurifolius (Laurel-leaved). *fl.* white, with a yellow mark at the base of each petal, large, umbellate. June. *l.* stalked, ovate-lanceolate, three-nerved; upper surface glabrous; under surface tomentose; footstalks dilated and connate at the base. *h.* 4ft. South-west Europe, 1731. (S. C. 52.)

C. laxus (loose).* *fl.* white, with a yellow spot at the base of each petal, cymose; peduncles and calyx hairy. July. *l.* on short footstalks, ovate-lanceolate, acuminated, with wavy, somewhat toothed margins, smoothish; upper ones hairy. *h.* 3ft. South Europe, 1656. (S. C. 12.)

C. longifolius (long-leaved).* *fl.* white, with a yellow mark at the base of each petal; peduncles cymose. June. *l.* on short footstalks, oblong-lanceolate, with waved and pubescent margins; under surface veiny. Spain and South of France, 1800.

C. monspeliensis (Montpelier).* *fl.* white, middle-sized; petals imbricate, crenate; peduncles pilose, cymose, somewhat secund. July. *l.* linear-lanceolate, sessile, three-nerved, clammy, villous on both surfaces. *h.* 4ft. South Europe, 1656. (S. C. 27.)

C. m. florentinus (Florentine).* *fl.*, petals white, yellow at the base, imbricate; peduncles villous, generally three-flowered. June. *l.* narrow-lanceolate, wrinkled, reticulated on the under surface; almost sessile. *h.* 3ft. Italy, 1825. A hybrid between *monspeliensis* and *salvifolius.* (S. C. 59.)

C. oblongifolius (oblong-leaved).* *fl.* white, with a yellow spot at the base of each, concave, imbricated; peduncles cymose. June. *l.* on short footstalks, oblong-lanceolate, obtuse, pubescent and waved at the margins; under surface veiny. Branches hispid-villous. *h.* 4ft. Spain. (S. C. 67.)

C. obtusifolius (blunt-leaved).* *fl.*, petals white, with a yellow spot at the base of each, imbricated; peduncles terminal, cymose, many-flowered. June. *l.* almost sessile, tapering to the base, ovate-oblong, obtuse, wrinkled, clothed with starry pubescence; margins somewhat denticulated. *h.* 1ft. to 1½ft. Crete. (S. C. 42.)

C. populifolius (Poplar-leaved). *fl.* white, cymose; sepals clammy; peduncles bracteate, bracts oblong. May to June. *l.* stalked, cordate, acuminate, wrinkled, smooth. *h.* 3ft. South-western Europe, 1656. (S. C. 23.)

C. psilosepalus (smooth-sepaled).* *fl.* somewhat cymose; peduncles hairy-tomentose; sepals with long points, glabrous, shining, edges ciliated; petals broad-cuneated, imbricated, white, with a yellow mark at the base of each. June to August. *l.* on short footstalks, oblong-lanceolate, three-nerved, acute, with undulated margins, which are somewhat denticulated and ciliated, rather hairy. *h.* 2ft. to 3ft. Native country unknown. (S. C. 33.)

C. purpureus (purple).* *fl.*, petals reddish-purple, marked at the base with a dark purple spot, imbricate; peduncles one, two, or three together. June. *l.* oblong-lanceolate, acuminated at both ends, wrinkled; footstalks short, hairy, sheathing. *h.* 2ft. Levant. (S. C. 17.)

Cistus—*continued.*

C. rotundifolius (round-leaved).* *fl.*, petals purple, with a yellow mark at the base of each, imbricate; sepals cordate, pilose; peduncles very hairy, rather cymose. June to September. *l.* roundish-ovate, obtuse, flat, wrinkled, reticulately veined, clothed on both sides with fascicled hairs; petioles furrowed, somewhat sheathing at the base. *h.* 1ft. South Europe, 1640. (S. C. 75.)

C. salvifolius (Sage-leaved). *fl.* white, middle-sized; peduncles long, white from tomentum, one-flowered, articulated above, solitary or tern. June to August. *l.* stalked, ovate, obtuse, wrinkled; under surface tomentose. *h.* 2ft. South Europe, 1548. (S. C. 54.) There are many varieties of this species.

C. s. Corbariensis (Corbar).* *fl.*, petals white, imbricate; peduncles long, one to five-flowered. May. *l.* stalked, somewhat cordate, ovate, acuminated, with fringed margins, wrinkled on both surfaces, and very glutinous. *h.* 2ft. South of France, 1656. A hybrid between *salvifolius* and *populifolius*. (S. C. 8.)

C. undulatus (waved). A synonym of *C. villosus*.

C. vaginatus (sheathed).* *fl.* rich rose; petals imbricate; peduncles three-flowered, axillary or terminal, long, bracteate at the base. April to June. *l.* lanceolate, acute, three-nerved, hairy; under surface reticulated; footstalks furrowed, dilated, and sheathing at the base, with pilose margins. *h.* 2ft. Teneriffe, 1779. (S. C. 9.)

C. villosus (villose).* *fl.*, petals large, reddish-purple, spreading, imbricate at the base; peduncles one-flowered, one or three together. June. *l.* roundish-ovate, wrinkled, tomentose and hairy, stalked; footstalks furrowed, connate at the base. *h.* 3ft. South Europe, 1596. SYNS. *C. incanus* and *C. undulatus*. (S. C. 35.)

FIG. 458. CITRULLUS VULGARIS, showing Habit of Plant, and (*a*) Male and (*b*) Female Blossoms.

C. v. canescens (hoary).* *fl.*, petals crenulated, of a darkish-purple, tinged with blue, and with a yellow spot at the base of each; sepals clothed with starry pubescence; peduncles terminal, one-flowered, or somewhat cymose. May. *l.* oblong-linear, bluntish, tomentose, hoary, waved, rather three-nerved, sessile, and somewhat connate at the base. *h.* 2ft. South Europe. (S. C. 45.)

CITHAREXYLUM (from *kithara*, a lyre, and *xylon*, wood; in reference to the fitness of the wood for musical instruments). Fiddle-wood. ORD. *Verbenaceæ*. A genus of about a score rather ornamental stove evergreen trees. Probably very few are now grown. They have principally white flowers, and in height range from 6ft. to 50ft. Some of the species which have been introduced are: *caudatum*, *cyanocarpum*, *dentatum*, *quadrangulare*, *subserratum*, and *villosum*.

CITRON. *See* **Citrus medica.**

CITRULLUS (from *Citrus*, in allusion to the Orange-like fruits). ORD. *Cucurbitaceæ*. A small genus of stove herbs, closely allied to *Cucumis*. Flowers unisexual, with a persistent five-parted calyx and corolla. Fruit a many-seeded gourd. For culture, &c., *see* **Cucumis.**

C. Colocynthis (Colocynth, the classical name of the plant). Bitter Apple; Bitter Cucumber. *fl.* light yellow, solitary. *fr.* globose, rarely 3in. in diameter, intensely bitter, smooth, variegated green and white. *l.* deeply divided, 2½in. by scarcely 2in., ovate; middle segment compound-pinnatifid. Whole plant scabrid. India. Perennial. (B. M. Pl. 114.) SYN. *Cucumis Colocynthis*.

C. vulgaris (common).* **Water Melon.** *fl.* yellow. *fr.* often 10in. in diameter, sometimes much smaller, sweet or bitter. *l.* deeply divided, or but moderately lobed, glabrous or somewhat hairy, hardly scabrid. India. "Said to be annual, while *C. Colocynthis* is perennial; but the distinction between the cultivated form of *C. Colocynthis* and the divided-leaved forms of the Water Melon, is very small." SYNS. *Cucumis* and *Cucurbita Citrullus*. See Figs. 458 and 459.

FIG. 459. WATER MELON (CITRULLUS VULGARIS).

FIG. 460. FRUITING BRANCH OF SWEET ORANGE (CITRUS AURANTIUM).

FIG. 461. FRUITING BRANCH OF SHADDOCK (CITRUS DECUMANA).

CITRUS (from the Greek name, *Kitron*). Orange-tree. ORD. *Rutaceæ*. Greenhouse evergreen trees or shrubs, having axillary spines and simple leaves, with their petioles usually winged. Flowers white, exquisitely fragrant. Some plants of the *Citrus* family are found in most gardens. The flowers are produced at all seasons, and are much used for wedding bouquets. The leaves are of a glossy green colour; and even the non-flowering plants have a fine appearance. The soil used when cultivating in pots or tubs should be a moderately heavy loam, to which a liberal portion of decayed manure and sand has been added. During the growing season, some liquid manure should be regularly supplied; but, as soon as growth declines, this should be gradually stopped. A moist atmosphere should be kept up during the season of growth, as one approaching drought causes the plants to have a starved and stunted appearance. In potting, the soil should be rammed firmly, or the wood will be too soft and sappy to ripen properly. If grown in a greenhouse, the heat must not be less than 45deg. in winter; and in summer, of course, it will vary, the ordinary temperature, with plenty of air at all times, being suitable. Propagation may be effected by seed, cuttings, layers, grafting and budding. The object of raising plants from seed is to obtain stocks for grafting or budding. The seedlings should be raised on a hotbed; in the course of six weeks, they will be fit to plant separately into pots, after which they must be replaced in the hotbed, and shaded for some time, but afterwards allowed plenty of air, in order to harden them. In August of the next year, they will be sufficiently strong for budding; after the operation has been performed, they should be placed under a hand glass. In the course of a month, it will be observable whether the buds have taken; they must then be untied, and allowed to remain in the greenhouse all the winter. In spring, cut off the heads of the stocks, 3in. above the buds, again place them in a moderate hotbed, and by the end of July they will have made shoots 2ft. long. Then harden them off before the cold sets in, by gradual exposure to the air. Of most of the following species there are a great number of varieties, more or less distinct.

For cultivation of *Citrus* as a dessert fruit, *see* **Orange.**

FIG. 462. FRUITING BRANCH OF KUMQUAT (CITRUS JAPONICA).

Citrus—*continued.*

C. Aurantium (golden).* Sweet Orange. *fr.* golden, globose, with a thin rind and sweet pulp. *l.* ovate-oblong, acuminate; petioles almost naked. *h.* 10ft. to 30ft. Asia, 1595. See Fig. 460. (B. M. Pl. 51.)

C. decumana (huge). Shaddock. *fr.* very large and round, about the size of a cannon-ball, often 10lb. to 14lb. weight; rind even, of a greenish-yellow colour, thick, fungous, and bitter. *l.* oval, obtuse, or emarginate, pubescent beneath; petioles with broad cordate wings; branches prickly. *h.* 18ft. Assumed to have been derived from Polynesia; now naturalised in many tropical countries. 1722. See Fig. 461.

C. japonica (Japanese). Kumquat. *fr.* globose or shortly ellipsoid, bright orange-yellow, four to six-celled; rind thick, minutely tuberculate; pulp watery, sweet, and acidulous. *h.* 4ft. to 6ft. A cultivated form, from China and Japan. Mr. Fortune—who introduced it—gives the following hints as to its cultivation. In summer, it requires a plentiful supply of water, at a temperature of 80deg. or 100deg. and a high atmospheric heat continued into autumn, whilst in winter it should be kept cool and rather dry, for it will then bear 10deg. and even 15deg. of frost. It succeeds well grafted on *Citrus trifoliata*. The Kumquat is a well-known ingredient in Chinese sweetmeats. See Fig. 462.

C. Limetta (Lime).* Sweet Lime, or Lemon Bergamotte. *fr.* globose, with a blunt, nipple-like protuberance at the apex, a firm rind, and sweet pulp. *l.* ovate-roundish, serrated; petioles subulate. *h.* 8ft. to 15ft. Asia, 1648. Adam's Apple is a name sometimes given to the fruit of this species.

C. Limonum.* Lemon. *fr.* oblong, with a very thin yellow rind, which adheres to the acid pulp. *l.* oval-oblong, crenulated; petioles somewhat winged. *h.* 8ft. to 10ft. Asia, 1648. (B. M. Pl. 54.)

FIG. 463. FRUITING BRANCH OF CITRON, OR CEDRAT (CITRUS MEDICA).

C. medica ("the fruits of the Citron were called *Mala medica*, or *Mala persica*, by the Romans, from the country of their origin").* Citron, or Cedrat. *fr.* often 6in. long, ovate, with a protuberance at the tip; usually nine-celled; pulp white, and commonly acid; rind yellow, thick, hardish, odoriferous, irregular; esculent, both raw and preserved. *l.* oblong, obtuse; petioles naked. Branches spiny. *h.* 8ft. to 16ft. Asia, 1648. See Fig. 463.

C. m. acida (acid). The cultivated West Indian Lime. This is a variety of *C. medica*, with smaller globose fruit. It is the

Citrus—*continued.*

principal source whence citric acid is obtained, and is largely grown in the West Indies, especially in Montserrat and Dominica. (B. M. 6745.)

FIG. 464. FRUITING BRANCH OF MANDARIN ORANGE (CITRUS NOBILIS).

C. nobilis (noble).* Mandarin Orange. *fr.* reddish, both without and within, containing sweet juice, and having edible sweet rind; depressed, nine to twelve-celled. *l.* somewhat ovate; petioles rather linear, straight. Branches ascending, unarmed. *h.* 15ft. China, 1805. See Fig. 464. (A. B. R. 608.)

C. trifoliata (three-leaved). *fr.* orange-yellow, spherical, about 1½in. in diameter. *l.* trifoliate; leaflets sessile, elliptic-obtuse, on a winged petiole. Branches robust, often more or less flattened, bearing stiff spines. *h.* 4ft. Japan. Hardy. SYN. *Pseudægle sepiaria*. (B. M. 6513.)

C. vulgaris (common). Common Seville or Bitter Orange. *fr.* globose, with a thin, scabrous, or smooth rind, and a bitter acrid pulp. *l.* elliptical, acuminate, crenulated; petioles with a heart-shaped wing. Stem erect; branches spiny. *h.* 20ft. to 30ft. Asia, 1595.

CIVES. *See* **Chives.**

CLADRASTIS (derivation obscure). ORD. *Leguminosæ*. A small genus, containing but a couple of species of hardy deciduous trees. They succeed in almost any soil or situation. Propagated by imported seed, sown in the open air, in spring; or by cuttings of the roots. (It is only during hot seasons that seeds are ripened in this country.)

C. amurensis (Amoor).* *fl.* greenish-white, small, disposed in long, dense, erect racemes. *l.* unequally pinnate, with three to four pairs of ovate-oblong leaflets. *h.* 6ft. Amoor Valley, 1880. Very ornamental. SYN. *Maackia amurensis*. (B. M. 6551.)

C. tinctoria (dyers'). *fl.* white, drooping from the ends of the branches in ample panicled racemes. May. *l.* nearly smooth, pinnate; leaflets from seven to eleven, oval or ovate. North America. SYN. *Virgilia lutea*.

CLAMMY. Viscid, sticky.

CLARKIA (named after Captain Clarke, the companion of Capt. Lewis, in his journey to the Rocky Mountains of North America). ORD. *Onagraceæ*. Elegant slender branching annuals. Flowers axillary, sessile, solitary; petals four, cruciate, usually three-lobed, convolute in æstivation. Leaves alternate, lanceolate, or linear, entire. These charming flowers are very largely grown in gardens, on account of their extreme showiness and easy culture. Seeds may be sown in spring or autumn, out of doors. When the plants are in their flowering quarters, a distance of 9in. to 12in. apart should be allowed.

C. elegans (elegant).* *fl.* of a rich lake colour; petals entire, without teeth or the claw. Summer. *l.* lanceolate, dentate. *h.* 2ft. California, 1832. (B. R. 1575.) There are many forms of this species, including white, rose, and double-flowered varieties, many

Clarkia—*continued.*

of which are very desirable, and may be easily procured at any dealer's.

C. guaroides (Guara-like). A synonym of *C. rhomboidea.*

FIG. 465. FLOWERING BRANCH AND SINGLE FLOWER OF CLARKIA PULCHELLA.

C. pulchella (pretty).* *fl.* purple, large; petals deeply trilobed, with a pair of small opposite teeth on the claws. Summer. *l.* glabrescent, linear. *h.* 1½ft. to 2ft. North America, 1826. See Fig. 465. (B. R. 1100.) This species also has many single and double-flowered varieties, more or less beautiful, which are fully described in seedsmen's catalogues.

C. rhomboidea (rhomboid) is a species with smaller purplish flowers than either of the preceding. SYN. *C. guaroides.* (S. B. F. G. 379.)

CLARY (*Salvia Sclarea*). The leaves of this are sometimes used in soups. The culture is very simple. Seeds may be sown in early spring, in a warm sunny border, and the plants ultimately thinned out to 18in. apart. An annual sowing is necessary, as the plants die after the seed ripens.

CLAUSENA (commemorative of P. Clausön, a Danish botanist of the seventeenth century). ORD. *Rutaceæ.* A genus of about fourteen species of stove evergreen trees, occurring for the most part in India, a few being found in Africa and tropical Australia. Flowers small, disposed in loose panicles. Leaves impari-pinnate; leaflets stalked, pubescent. They thrive in rich loam; young cuttings, ripened at the bottom, and taken off at a joint, will root in sand, under a hand glass, in heat.

C. corymbiflora (corymb-flowered). *fl.* white. Loyalty Islands, 1878.

C. pentaphylla (five-leaved). *fl.* white. June to August. *l.* with five or seven pairs of leaflets. *h.* 20ft. India, 1800.

CLAVATE. Club-shaped; the thick end uppermost.

CLAVIJA (named after J. Clavijo Faxardo, a Spanish naturalist, who translated Buffon's works into Spanish). SYN. *Theophrasta* (of Linnæus, not of Jussieu). ORD. *Myrsineæ.* A genus of stove evergreen trees or shrubs. Stems simple, unbranched, furnished at top with a tuft of long, alternate, oblong-lanceolate, coriaceous, spiny-toothed or quite entire leaves, somewhat in the manner of palm-trees. Flowers in axillary or lateral racemes, often secund. There are about twenty-five species, all natives of tropical America, &c. They thrive in a compost of peat and loam. Cuttings of half-ripened shoots will root in sandy loam, with a surface consisting wholly of sand, if placed in bottom heat, under a bell glass.

Clavija—*continued.*

C. fulgens (brilliant).* *fl.* deep orange-red, very handsome; racemes short, axillary. *l.* obcuneately spathulate, 1ft. or more long. Stem simple, bearing a crown of leaves. Peru, 1867. (B. M. 5626.)

C. macrocarpa (large-fruited). *fl.* rather large; racemes from 3in. to 12in. long, pendulous. *l.* spathulate-oblong, acute, stiff, dotted beneath; petioles hardly 1in. long. *h.* 10ft. to 12ft. Peru, 1816.

C. macrophylla (large-leaved). A synonym of *C. Reideliana.*

C. ornata (adorned).* *fl.* orange-coloured; racemes drooping, 3in. to 4in. long. *l.* long-lanceolate, acute, spiny-toothed; petioles 2¼in. long. *h.* 10ft. to 12ft. Caraccas, 1828. SYN. *Theophrasta longifolia.* (B. M. 4922.)

C. Reideliana (Reidel's).* *fl.* orange-coloured; racemes axillary, from amongst and beneath the crown of leaves. July. *l.* sessile obovate-lanceolate, spinosely-serrate; larger ones 12in. to 20in. long. Brazil. SYN. *C. macrophylla.* (B. M. 5829.)

Other two species are: *Rodekiana* and *umbrosa.*

CLAW. The unguis or stalk of a petal; the narrow end.

CLAY-COLOURED VINE WEEVIL. *See* **Vine Weevils.**

CLAYTONIA (named after John Clayton; he collected plants, mostly in Virginia, and sent them to Gronovius, who published them in his "Flora Virginica"). ORD. *Portulaceæ.* A genus of delicate little glabrous, rather succulent, hardy annuals or perennials. Racemes terminal. Leaves quite entire; radical ones petiolate, upper usually opposite and sessile, and sometimes connate. Claytonias are of easy culture, and suited for certain parts of the rockery or wild garden. The tuberous-rooted species thrive best in damp peat soil. They may be increased by seeds, which sometimes ripen freely; or by offsets, which may be separated in spring or autumn. The fibrous-rooted species being annuals, the seeds only require to be sown in the open border in spring, in a rather moist situation.

C. caroliniana (Carolina). *l.* spathulate-oblong or oval-lanceolate. North America. (S. B. F. G. 208.)

C. grandiflora (large-flowered). Synonymous with *C. virginica.*

C. perfoliata (perfoliate). *fl.* white, small; lower pedicels of raceme in bundles. May to August. *l.*, upper ones connate or perfoliate, forming a roundish disk; radical ones petiolate, oval-rhomboid. Root fibrous. *h.* 3in. to 6in. North-west America to Mexico and Cuba, 1794. Annual. This species is naturalised in many parts of Britain and other countries. (B. M. 1336.)

FIG. 466. CLAYTONIA SIBIRICA, showing Habit and Single Flower.

C. sibirica (Siberian).* *fl.* rose-coloured; petals bifid; raceme secund. March. *l.* oval; radical ones petiolate; cauline ones two, opposite, sessile. Root fusiform. *h.* 3in. to 6in. Siberia, 1768. Perennial. See Fig. 466. (B. M. 2243.)

C. virginica (Virginian).* *fl.* white; petals emarginate; pedicels elongated; raceme solitary, nodding. March. *l.* linear-lanceolate, elongated; radical ones very few. *h.* 3in. Roots tuberous. North America, 1768. Perennial. SYN. *C. grandiflora.* (B. M. 941.)

CLEFT. Divided, but not exactly to the base.

CLEISOSTOMA (from *kleio*, to close, and *stoma*, a mouth; in allusion to the mouth of the spur being closed by a toothed process). ORD. *Orchideæ*. Stove epiphytes. Flowers small, fleshy, with a pouched lip, and distinguished from those of *Saccolabium* in having the orifice of the pouch closed by a large projecting tooth. Leaves leathery, narrow. Roots very long and tough. There are about fifteen species belonging to this genus, but, with one or two exceptions, they are not much grown. For culture, *see* **Aerides.**

C. Dawsoniana (Dawson's).* *fl.* sulphur-coloured outside, darker inside, with elegant transverse brown bars; stellate, of a thickish substance; lip quinquefid, orange-yellow, with some brown blotches and streaks; disk covered with many golden hairs; column small, with two falcate penicillate ears. The inflorescence has a sword-shaped rachis; the branches bicarinate, and bearing the flowers in an alternating way; bracts very dry, triangular, carinate, shining brown. *l.* distichous, light green, about 6in. long. Moulmein, 1868. A very gay and pretty species.

C. striatum (striate). *fl.* yellow, red. Darjeeling, 1879. SYN. *Echioglossum striatum.*

CLEMATIS (from *klema*, a Vine branch; most of the species climb like the Vine). Virgin's Bower. ORD. *Ranunculaceæ*. A genus of climbing deciduous shrubs or herbaceous perennials. Calyx of from four to eight coloured sepals; petals none. Carpels numerous, aggregate, terminated by a long, mostly feathery, tail. Leaves opposite, variously cut. For climbing up stumps of old trees, training to trellises on walls, or planting to droop over amongst rockwork, no plants are more suitable, or will make a more gorgeous display, than many of the large-flowered Clematises. Their habit and character alone are suggestive of the many ornamental purposes to which they may be put, and there are few places which may not be adorned by them in some way or other. Not only are they well adapted for running up all kinds of supports, but many of the grand hybrid varieties are equally suitable for trailing over the surface of the ground, and covering beds, either alone or associated with a few distinct foliage plants, such as *Negundo fraxinifolium variegatum*, with which they look well, and produce a charming effect.

General Cultivation. To get the Clematis to flower well and continuously in dry weather, it must have a good depth of rich loamy soil, and a fair share of manure, both above and below the surface. Liquid manure is also a great help to free flowering, and therefore good soakings of it should be given from time to time, according to the state of the weather. As Clematises are always kept in pots for sale, the month of June is a favourable one to obtain them and plant out; but before doing this, suitable preparations should be made, by deeply trenching the ground, which, if at all stiff, will be greatly improved by having plenty of leaf soil, refuse peat, or other rich vegetable matter, worked in, together with some road scrapings or trimmings, which will keep the whole open and allow the roots to ramify freely. When required for borders, the best way of growing Clematis is to dig large holes, about 3ft. across and 2ft. deep, and either fill in with fresh turfy loam and dung, or add a good proportion of the same to the soil thrown out, before it is put back. Place one or more plants in the centre of each hole, and also three tall stakes, triangularly, for the plants to climb up, which they will do with very little assistance after they have had a tie or two and made a fair start. These stakes should be driven in firmly, about 2ft. apart, and then brought together at the tops, and secured by running a piece of wire round them, so that the three, when fixed, form a graduated cone, the shape and outline of which is always the most pleasing of any kind of trellis or support that can be used. The *lanuginosa* types are best adapted for planting to train on verandahs or up trellises on dwellings, where, if well fed, and otherwise left pretty much to themselves, they soon cover a large space and produce an immense number of flowers. Different growers of Clematises vary much in their manner of treating them. Some, instead of thinning or simply shortening back the shoots during the winter,

adopt the more severe proceeding of cutting away the whole of the tops, so as to force the plants to break again from the crowns. This method answers for *Jackmanni*, and the strong-growing series of which it is the type. It is, however, not to be recommended in the case of those of the *lanuginosa* type, which generally die back quite far enough, and only require that such dead portions should be cut away, as to do anything further only weakens them, by restricting their growth. Neither is this treatment desirable with any of the others, except such as are confined to beds and have only limited spaces to fill. Heading back those used for covering old trunks of trees, gnarled poles, or other similar supports, lays the latter bare for a long time in spring and early summer, when they would be covered with verdure. It also retards the period of flowering.

Propagation is mainly effected by grafting any of the varieties on portions of Clematis roots, early in the year. Good healthy pieces of root, obtained from old plants outside, or those of *C. Flammula*, answer the purpose well.

FIG. 467. FLOWERING BRANCH OF CLEMATIS AROMATICA.

These should be split open, and the small scions inserted and tied with matting; they should then be potted in thimble pots, and placed in a propagating case, with a warm, moist temperature, where they will readily unite. They may afterwards be removed to cooler quarters, and be ultimately plunged outside.

All the different varieties of Clematis may also be readily increased, either by cuttings, made of the young shoots, which may be cut up to every eye, and placed in pots of sandy soil, in gentle heat, in the propagating case; or by layers outside, put in at any time. Layers will, in the course of a year, if kept watered, be found to emit roots at the joints covered, after which they may be severed and planted, just before growth commences, in the spring. To aid them in rooting, it is a good plan to slightly scrape the bark before laying the branches in.

Clematis—*continued.*

Clematises may be easily increased, if required, by seed. The seed vessels should be gathered towards the autumn, and stored in some dry, cool place till the following spring, when the seed they contain may be sown in light sandy soil, and stood in gentle heat till they germinate. If then nursed on for a time under glass, and afterwards planted in deep rich loam, the plants will soon flower. The varieties being now so numerous, and brought to such perfection by systematic crossing, it is hardly to be expected that many improved forms are to be obtained by ordinary cultivators, by merely raising them from seed.

For greenhouse or conservatory decoration, the tenderer sorts are extremely useful. A house having a temperature of 40deg. to 50deg. is the best; and, whether grown in pots or trained on the roof or back wall, the plants prove equally ornamental. With the general exception of a few degrees of higher temperature, the culture of the greenhouse species does not materially differ from that of the hardy sorts.

C. æthusifolia (Æthusa-leaved). *fl.* white, between cylindric and campanulate, ¼in. to ¾in. long. *l.* small, two to three pinnatisect, with narrow linear lobes. *h.* 4ft. to 6ft. Hardy.

C. æ. latisecta (broadly-cut) only differs from type in the larger leaf segments, which are as broad as long, and irregularly toothed. Amur-land and North China. A very graceful hardy climber. (B. M. 6542.)

C. aristata (awned). *fl.* greenish-yellow, dicœcious, panicled; sepals four. May to August. *l.* ternate; leaflets ovate, somewhat cordate, acute, coarsely toothed. Australia, 1812. Greenhouse. (B. R. 238.)

C. aromatica (aromatic).* *fl.* deep violet-blue, sweetly-scented, terminal, solitary; sepals oblong-lanceolate, three-nerved, reflexed after flowers have thoroughly expanded. Summer. *l.*, leaflets five, shortly stalked or almost sessile, entire, broadly ovate, or ovate-oblong, dark green above, paler beneath. *h.* 4ft. to 6ft. Native country unknown. A sub-shrubby perennial. SYN. *C. cærulea odorata.* See Fig. 467.

C. azurea grandiflora (large-flowered blue). A synonym of *C. cærulea.*

C. balearica (Balearic). *fl.* pale, pubescent on the outside, and marked on the inside with oblong red spots, about 2in. across; peduncles one-flowered, with an involucre under the flower. February, March. *l.* ternate; leaflets stalked, three-lobed, deeply toothed. Minorca, 1783. Greenhouse; hardy in South of England. SYN. *C. calycina.* (B. M. 959.)

FIG. 468. FLOWERING BRANCH OF CLEMATIS CÆRULEA.

C. cærulea (sky-blue).* *fl.* violet-coloured, with deep purple stamens, large; sepals six to eight, oblong-lanceolate, acute, membranaceous. June and July. *l.* spreading, hairy, ternate; leaflets ovate-acute, entire. Japan, 1836. Hardy. SYN. *C. azurea grandiflora.* See Fig 468. (B. R. 1955.) There are several forms of this species, amongst which are: *Amalia*, pale violet; *monstrosa*, remarkable for its semi-double greenish flowers; *patens*, white; and *Sophia*, having very large and unusually broad sepals, of a deep violet, with a longitudinal greenish band through the centre.

C. c. odorata (sweet-scented). A synonym of *C. aromatica.*

C. calycina (calycine). A synonym of *C. balearica.*

Clematis—*continued.*

C. campaniflora (bell-flowered). *fl.* of a purplish-white colour, large, half open; sepals half spreading, dilated at the apex, wavy; peduncles one-flowered, somewhat longer than the leaves. June. *l.* biternately decompound; leaflets entire or three-lobed, about twenty-four in number. Portugal, 1810. Hardy. (L. B. C. 987.)

C. caripensis (Caripan).* *fl.* white, sweet-scented, panicled, dicecious; pedicels and bracts pubescent. August. *l.* pinnate; leaflets ovate, acuminated, five-nerved, quite entire, smooth. Cumana, near Caripa, 1820. Stove.

C. chlorantha (green-flowered). A synonym of *C. grandiflora.*

FIG. 469. FLOWERS AND LEAVES OF CLEMATIS CIRRHOSA.

C. cirrhosa (tendrilled).* *fl.* pale whitish or cream-coloured, downy on the outside, but smooth inside; peduncles one-flowered, with an involucre. March. *l.* ovate, somewhat cordate, toothed, in fascicles. South Europe, 1596. Hardy evergreen. See Fig. 469. (B. M. 1070.)

C. crispa (curled).* *fl.* pale lilac or purple, nodding; sepals firm, constricted above the middle; margins wavy, reflexed and spreading at the apex; peduncles one-flowered, shorter than the leaves. July to September. *l.* entire, three-lobed or ternate, very acute. North America, 1726. Hardy evergreen. SYNS. *C. cylindrica* and *C. Simsii.* (B. M. 1892.)

C. cylindrica (cylindrical). A synonym of *C. crispa.*

C. erecta (erect). A synonym of *C. recta.*

C. Flammula (flame).* *fl.* pure white, fragrant; peduncles simple or branched. July to October. *l.* pinnate, smooth, with orbicular, oval, oblong or linear, entire or three-lobed, acutish leaflets. South Europe, 1596. A very vigorous climber, and one of the oldest in cultivation. There are several forms, which vary slightly from the type.

C. florida (florid).* *fl.* pale white, large, spreading; sepals six or eight, oval-lanceolate, much pointed; peduncles one-flowered, longer than the leaves. April to September. *l.* ternately decompound; leaflets ovate, acute, quite entire. Japan, 1776. Hardy. (B. M. 834.) The charming double-flowered form is much commoner in our gardens than the normal type.

FIG. 470. FLOWER AND LEAVES OF CLEMATIS FORTUNEI.

Clematis—*continued.*

C. Fortunei (Fortune's).* *fl.* white, fragrant, about 1in. across, and consisting of about a hundred oblong-lanceolate stalked floral leaves. *l.* coriaceous, usually trifoliate; leaflets cordate, rounded at the apex. Japan, 1863. A splendid hardy species, of which there are two or three varieties. See Fig. 470. (G. C. 1863, 676.)

C. grandiflora (large-flowered).* *fl.* greenish-yellow, campanulate, very large; peduncles one to three-flowered, shorter than the leaves. February to May. *l.* pinnate, smooth; leaflets five, ovate, cordate, acuminated, coarsely serrated. Sierra Leone, 1823. Stove or warm greenhouse. SYN. *C. chlorantha.* (B. R. 1234.)

C. graveolens (strong-smelling).* *fl.* pale yellow, medium-sized, solitary. Summer. *l.* pinnately three to five-foliate; leaflets narrow, three-lobed. Chinese Tartary, 1844. A small, hardy, climbing shrub. (B. M. 4495.)

C. grewiæflora (Grewia-flowered). *fl.* of a tawny-yellow colour. about 1¼in. long, campanulate. *l.* ovate, covered with rusty down, Himalayas, 1868. A distinct-looking cool greenhouse species. (B. M. 6369.)

C. indivisa (simple).* *fl.* white, cream, panicled. April. *l.* ternate; leaflets ovate, quite entire, mucronate, coriaceous, smooth. New Zealand, 1847. Half-hardy. *C. i. lobata* is a form of this, with lobed leaflets, but is otherwise like the type. (B. M. 4398.)

C. integrifolia (entire-leaved). *fl.* nodding; sepals blue, coriaceous, younger ones with villous edges, adult ones with wavy edges; peduncles terminal, one-flowered. June to August. *l.* entire, ovate-lanceolate, smooth; the two upper ones are concave and connivent before flowering, hence they inclose the flower as if it were in a bladder. *h.* 2ft. Eastern Europe, 1596. (B. M. 65.) There are two or more varieties of this hardy species.

FIG. 471. FLOWERS AND LEAVES OF CLEMATIS VIORNA.

C. lanuginosa (woolly).* *fl.* solitary, very large, 6in. to 7in. across, formed of six or eight spreading sepals. Early summer. *l.* usually simple, broadly cordate, acute, glabrous above and hairy beneath. China, 1851. Hardy. (F. d. S. 8, 811.) The variety *pallida* has flowers from 9in. to 10in. across.

C. montana (mountain).* *fl.* white, large, resembling in size and form those of *Anemone sylvestris*; peduncles usually one-flowered. Early summer. *l.* ternate or trifid, smooth; leaflets oblong, acuminated, rather toothed at the base, lateral ones almost sessile. *h.* 20ft. Nepaul, 1831. Hardy in most places. (G. C. 1872, p. 1424.)

C. ochroleuca (yellowish-white). *fl.* erect, or a little inclined, cream-coloured, and yellow on the outside; peduncles one-flowered. July. *l.* entire, ovate; younger ones silky. Stem erect. *h.* 1ft. to 2ft. East United States, 1767. Hardy perennial. (L. B. C. 661.)

C. orientalis (Eastern). *fl.* greenish-yellow, with a tinge of russet on the upper part and outside, sweet-scented, panicled. August. *l.* pinnate; leaflets smooth, wedge-shaped, with three toothed pointed lobes. *h.* 8ft. Orient, 1731. Half-hardy.

C. paniculata (panicled).* *fl.* white, sweet-scented, resembling those of *C. Flammula*; pedicels panicled, many-flowered. July, August. *l.* pinnate; leaflets ovate-cordate, acute, entire. Japan, 1796. Hardy.

C. Pitcheri (Pitcher's). *fl.* dull purplish, bell-shaped; sepals with narrow and slightly margined, recurved points; tails of the fruit filiform and barely pubescent. July to August. *l.*, leaflets three to nine, ovate or cordate, entire or three-lobed; uppermost leaves often simple. United States. A hardy climber.

C. recta (erect).* *fl.* white, sweet-scented; sepals oval; corymbs densely flowered. June to August. *l.* pinnate; leaflets stalked, ovate, acuminated, quite entire. Stem erect. *h.* 2ft. to 3ft. South and East Europe, 1597. Herbaceous perennial. SYN. *C. erecta.*

Clematis—*continued.*

C. Simsii (Sims's). A synonym of *C. crispa.*

C. smilacifolia (Smilax-leaved.) *fl.*, sepals four, linear-oblong, clothed with rusty tomentum on the outside, but smooth and purple on the inside; panicles axillary, few-flowered, rather shorter than the leaves. *l.* ovate-cordate, smooth, entire. Nepaul, 1823. Greenhouse. (B. M. 4259.)

C. tubulosa (tubular).* *fl.* blue, with a long slender tube, of a deeper colour than the spreading limb, in shape very much resembling the flower of a common Hyacinth. Autumn. *l.* broad, with three broadly oval-rounded leaflets. Stem erect, almost woody. *h.* 2ft. to 3ft. China, 1845. Hardy. (B. M. 4269.) *C. Davidiana* (David's), a blue-flowered sort, from the same country, whence it was introduced in 1863, is closely allied to this species. (R. H. 1867, 90.)

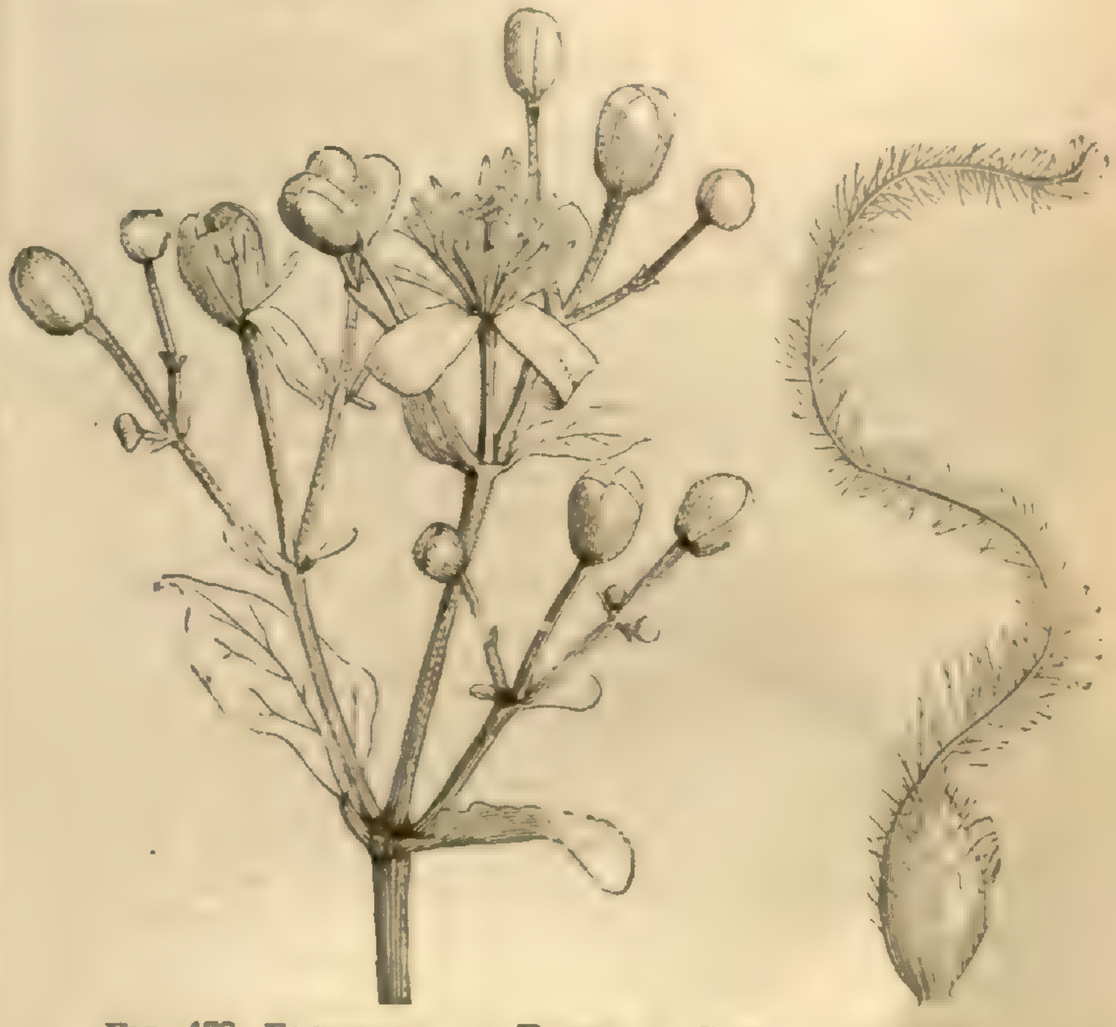

FIG. 472. FLOWERS AND FRUIT OF CLEMATIS VITALBA.

C. verticillaris (verticillate). Synonymous with *Atragene americana.*

C. Viorna (Viorna). Leather-flower. *fl.* purple, yellow inside, large, drooping; sepals connivent, thick, acuminated, reflexed at the apex; peduncles one-flowered. June. *l.* smooth, pinnate; leaflets entire, three-lobed, or ternate, ovate, acute, floral ones entire. *h.* 10ft. to 12ft. North America, 1730. Hardy. See Fig. 471.

C. V. coccinea (scarlet).* *fl.* solitary, axillary, or at the extremities of the branches on long coloured peduncles; sepals four, very thick and fleshy, about 1½in. long, campanulate at the base; segments reflexed at the tip; interior yellow, exterior of an intense vermilion. Texas, 1868. A slender-growing but very elegant species, reaching about 5ft. or 6ft. in height. Probably hardy. In some books, this has been named *C. Pitcheri*, a widely different species. (B. M. 6594.)

FIG. 473. FLOWERING BRANCH OF CLEMATIS VITICELLA.

Clematis—*continued.*

C. virginiana (Virginian).* *fl.* white, fragrant, small, panicled, dioecious. June to August. *l.* ternate; leaflets cordate, acute, grossly toothed or lobed. *h.* 15ft. to 20ft. North America, 1767. Hardy. (W. D. B. 74.)

C. Vitalba (White Vine).* Old Man's Beard; Traveller's Joy, &c. *fl.* white, with a sweet almond scent; peduncles forked, shorter than the leaves. July to September. Seed or carpels furnished with a feathery tail. *l.* pinnate; leaflets ovate-lanceolate, acuminated, cordate at the base, partly cut. Europe (Britain), Western Asia. Hardy. See Fig. 472.

C. Viticella (Vine Bower).* *fl.* blue, purple, or rose-coloured, large, drooping; sepals obovate, spreading; peduncles one-flowered, longer than the leaves. June to September. *l.* entire or ternately decompound; lobes or leaflets entire. South Europe and Western Asia, 1569. Hardy. See Fig. 473. (B. M. 565.) There are several varieties of this species, one of which is double.

In "The Clematis as a Garden Flower," by Thos. Moore, F.L.S., and George Jackman, F.R.H.S., the following key to the various classes is given:

CLIMBING PLANTS.

Flowering on the Year-old Ripened Wood.

Flowers medium-sized (winter and spring bloomers)	§ 1. *montana* type.
Flowers large—	
Spring bloomers	§ 2. *patens* type.
Summer bloomers	§ 3. *florida* type.
Flowering from the Young Growing Summer Wood.	
Flowers small (late summer bloomers)	§ 4. *graveolens* type.
Flowers large (summer and autumn bloomers)	
Flowers successional, dispersed	§ 5. *lanuginosa* type.
Flowers successional, massed	§ 6. *Viticella* type.
Flowers profusely massed, continuous	§ 7. *Jackmanni* type.

NON-CLIMBING PLANTS.

With sub-shrubby stems	§ 8. *cærulea odorata* [*aromatica*] type.
With herbaceous stems	§ 9. *erecta* [*recta*] type.

It will be seen from this key to the classes, that the latter are numerous, and variable in habit and time of flowering. This difference must be borne in mind with each under cultivation, as it affects the manner of pruning considerably. To prune or remove the ripened wood of the three types first named, in winter, would, of course, destroy the flowers of the following year. The next four types make their growth and flower on it annually, consequently a little thinning out of the weaker shoots in early spring might prove of advantage by encouraging the stronger ones. Many varieties of these types have their shoots killed in winter by frost, being more tender, as a rule, than the three first-named. The last two types are quite distinct, being, as stated, non-climbing plants.

Varieties. Of late years, this magnificent genus of plants has been greatly improved by hybridisation. This very successful method of obtaining new kinds is believed (according to the authority already quoted) to have been first practised by Isaac Anderson-Henry, Esq., of Edinburgh, who was shortly afterwards followed by Mr. George Jackman, of Woking, Surrey. *C. Jackmanni* was one of the latter gentleman's first seedlings, and it is still one of the best and most useful we have. It flowered about the year 1862. Many other hybridisers, in this country and on the Continent, have since been at work with the different species and the hybrids afterwards obtained, to produce the very large and varied collection we now possess. We select a list, which is being constantly augmented, of the most approved varieties at the present time.

ALBERT VICTOR, deep lavender, the centre of each petal banded with brown, changing to white (May and June); ALEXANDRA, flowers pale reddish-violet; AMALIA, white, straw-coloured in centre, stamens reddish-purple (May and June); COUNTESS OF LOVELACE, large double-flowered variety, of rich purplish colour, the best double known; DEVONIENSIS, flowers the brightest and most delicate azure, large and well-formed, robust, hardy, and a free bloomer; DUCHESS OF EDINBURGH, fine double white, very large; DUKE OF EDINBURGH, rich violet-purple, very large; EARL OF BEACONSFIELD, royal purple, a magnificent variety; ENCHANTRESS, white, very double, the exterior petals flushed with rose; FAIR ROSAMOND, bluish-white, with a somewhat indistinct wine-red bar up the centre of each sepal, the stamens very prominent and distinct, exceedingly fragrant; FAIRY QUEEN, pale flesh, with a red bar in the centre of each petal; GEM, deep lavender-blue, very fine; GIPSY QUEEN, dark velvety-purple, very floriferous; GRAND DUCHESS, blush-white, very large and free; GUIDING STAR, purple, shaded crimson, a maroon band down each petal; HELENE, white, straw-coloured centre (May and June); HENRYI, large, of fine form, creamy-white, very free; HYBRIDA SPLENDIDA, rich violet, stems green (July to October); JACKMANNI, flowers large, deep violet-purple, rugose and veiny in centre, stamens green (July to October); JOHN GOULD VEITCH, flowers large and double, light blue (summer blooming); LADY BOVILL, flowers large, cupped, greyish-blue, suffused with mauve; LADY CAROLINE NEVILLE, bluish-white, with a broad bar in the centre of each petal; LADY LONDESBOROUGH, delicate silvery-grey, white stripe down each petal, stamens stained with pink (May and June); LILACINA FLORIBUNDA, pale lilac, very free; LORD LONDESBOROUGH, rich mauve, striped maroon, very large; LOUISA, mauve, shaded with pink (May and June); LOUIS VAN HOUTTE, rich blue-purple, very large and distinct; LUCIE LEMOINE, the largest and best double white; MADAME GRANGE, purplish-violet, red bar; MADAME VAN HOUTTE, pure white, fine shape and substance; MARIE LEFEBVRE, very fragrant; MISS BATEMAN, pure white, creamy band down each petal; MRS. JAMES BATEMAN, pale lavender, very handsome (May and June); OTHELLO, dark velvety-purple, fine form; OTTO FROEBEL, white, shaded with azure-blue, large; PRINCE OF WALES, deep violet-purple, petals barred with red (July to October); REGINÆ, flowers large, rich deep mauve in colour; SENSATION, rich satiny-mauve, large and very fragrant; SIEBOLDII, pale straw, centre puce, shaded with green (July to October); SOPHIE, mauve petals, pale straw in the centre, stamens chocolate (May and June); SOPHIE FLORE-PLENO, flowers double, mauve, outer petals pale yellowish-white (May and June); STANDISHII, flowers large, violet-blue (May and June); STAR OF INDIA, reddish-purple, with purple bands; STELLA, flowers light violet or deep mauve, with a distinct bar of deep reddish-brown or plum-colour in the centre of each sepal, delicately scented; SYLPH, white, shaded with light pinkish-mauve; SYMEIANA, pale mauve, flowers large; THOMAS MOORE, rich soft violet, stamens white; TUNBRIDGENSIS, dark blue, shaded with purple; VENUS VICTRIX, delicate lavender, an excellent form; VESTA, fine white, early flowering.

CLEMATITIS. *See* **Aristolochia Clematitis.**

FIG. 474. FLOWERING BRANCH OF CLEOME PUNGENS.

CLEOME (name adopted by Linnæus from Theodosius). Spider Flower. Including *Peritoma* and *Polanisia*. ORD. *Capparideæ*. A large genus, comprising about seventy species, mostly annual herbs—a few are shrubby. Flowers white, yellow, or purple, showy, solitary or racemose. Leaves simple, or digitately three to seven-foliate.

Cleome—*continued.*

They should be raised from seeds in spring, in a frame, with slight warmth, potted off singly, and hardened subsequently, so as to be planted out in May, when they should be vigorous plants. Cleomes thrive best in light rich soil, in a dry, warm situation, where they have plenty of room to spread. The stove shrubby species also require a light rich soil, and ripened cuttings root readily under a hand glass, in moderate heat; but as they produce seed freely, this will be unnecessary. The stove annuals are of easy culture.

C. arborea (tree-like). *fl.* white. June. *l.*, leaflets seven, with about twenty veins on each. *h.* 6ft. to 8ft. Caraccas, 1817. Stove shrub, velvety-pubescent, somewhat clammy.

C. gigantea (gigantic).* *fl.* whitish-green, with pinkish filaments and yellow anthers. June. *l.* seven-foliate, with thirty or forty veins on each leaflet. Plant shrubby, velvety-pubescent, somewhat clammy. *h.* 6ft. to 12ft. South America, 1774. This is a beautiful stove shrub, but has a strong disagreeable smell, and a caustic taste. (B. M. 3137.)

C. pungens (pungent).* *fl.* white, flesh-coloured, or rose, with purplish stamens and brownish anthers. July. *l.* prickly, covered with clammy hairs, with five to seven leaflets; bracts simple, cordate, or ovate. *h.* 1ft. to 3ft. West Indies, &c., 1817. Stove annual. SYN. *C. spinosa.* See Fig. 474. (B. M. 1640.)

C. rosea (rose).* *fl.* beautiful rose-coloured. June. *l.*, leaflets quinate; lower and floral ones ternate; uppermost ones ovate, sessile. Stem erect, branched. *h.* 1½ft. Rio Janeiro, 1824. An unarmed, smooth, stove biennial. (B. R. 960.)

C. speciosissima (showiest). *fl.* beautiful rose-coloured. July. *l.*, leaflets five to seven, lanceolate, acuminate, pilose. *h.* 1½ft. Mexico, 1829. An unarmed hardy annual. (B. R. 1312.)

C. spinosa (prickly). Synonymous with *C. pungens.*

CLERODENDRON (from *kleros*, chance, and *dendron*, a tree; said to be owing to the uncertainty of the medicinal qualities). SYNS. *Ovieda, Siphonantha, Volkameria*, and *Volkmannia.* ORD. *Verbenaceæ.* A genus containing about seventy species of mostly stove or greenhouse ornamental plants, having terminal panicles of brightly coloured pentamerous flowers, with exserted stamens and style; and simple leaves. These are among the best of stove plants, and in habit of growth present two sections, one with a climbing habit, and the other shrubby. A mixture of equal parts peat and loam, with the addition of a little leaf mould or decomposed manure, and some charcoal or sand, suits the climbing ones admirably. The shrubby sorts have more gross foliage, and need something stronger to enable them to throw up their large panicles of rich scarlet and other coloured flowers. They should be cut close back soon after flowering, and be kept somewhat dry during the winter, in a temperature of about 55deg. Propagation is very easily effected. Cuttings of the shrubby sorts, put in when the plants are cut down, root readily. Pieces of the stem, or side branches, from 3in. to 6in. or more in length, should be inserted in sandy soil, watered, and then plunged in a bottom heat of 70deg. Clerodendrons may also be propagated by seed, which, if sown when ripe, or in the spring, and grown on in heat, may be converted into flowering plants the second season. The climbing varieties do not root quite so readily from cuttings as the other section; but cuttings of the ripened wood, when the plants are pruned after flowering, should be put in sandy soil, and covered with a bell glass.

Clerodendrons are subject to mealy bug, but not more so than many other stove plants. The best cure for this pest is constant attention by hand-pickings, and washing with soft soap water or an insecticide. By such means, it may be readily kept in check, though rarely absolutely destroyed. Aphides sometimes attack the young and tender shoots; these may be destroyed, as soon as detected, by fumigating, two evenings in succession—not too strongly, or injury may be caused.

As the plants shed their leaves, little or no water will be needed during winter, but they should not be kept in too low a temperature. In January or February, they should be started in a brisk heat. When those in pots have grown a few inches, they should be shaken out,

Clerodendron—*continued.*

and potted in fresh soil. If they can be plunged in bottom heat for a time, they will thrive all the better and grow faster. Of course, climbing Clerodendrons, planted out in the stove, cannot be removed into a lower temperature; but the stove may be kept cooler in winter—say, a minimum temperature of 60deg.—and, as the wood has grown so near the glass, it will generally be sufficiently ripened to flower well the succeeding season. *C. Thomsonæ* is one of the most distinct and useful of stove climbers, and is also a good exhibition plant when well grown in a large pot. *C. fallax* is one of the best shrubby species.

C. Bethuneanum (Capt. Bethune's).* *fl.* crimson, with a white spot on the upper, and a purple one on the two lateral lobes; panicles large, terminal, pyramidal; bracts, pedicels and calyces all coloured. *l.* large, cordate-acuminate, smooth above. *h.* 10ft. Borneo, 1847. Stove shrub. (B. M. 4485.)

C. Bungei (Bunge's). A synonym of *C. fœtidum.*

C. calamitosum (calamitous). *fl.* white. August. *h.* 4ft. India, 1823. Stove. (B. M. 5294.)

C. fallax (deceptive). *fl.* bright scarlet; panicles terminal, erect, many-flowered. August and September. *l.* large, cordate-ovate, slightly lobed, dark green. Java. An erect-growing stove shrub.

C. fœtidum (fœtid).* *fl.* lilac-rose, in dense terminal corymbs. August. *l.* large, pubescent, cordate-acuminate, toothed, on slender petioles. *h.* 5ft. China, 1820. A handsome greenhouse or nearly hardy shrub armed with short rigid prickles. SYN. *C. Bungei.* (B. M. 4880.)

C. fragrans (fragrant).* *fl.* white; corymb terminal, hemispherical, compact. August to December. *l.* sub-cordate, serrate, pubescent, with two glands at the base. *h.* 6ft. China, 1790. Greenhouse. (B. M. 1834.)

C. f. flore-pleno (double-flowered).* *fl.* white, suffused with pink, very fragrant, disposed in compact heads. October. *l.* roundish-ovate or obovate, quite entire. *h.* 6ft. China, 1790. Greenhouse shrub.

C. hastatum (spear-leaved). *fl.* white, very fragrant, produced in a large panicle. June. *l.* large, halbert-shaped. *h.* 6ft. India, 1825. Stove shrub. (B. M. 3398.)

C. infortunatum (unfortunate). *fl.* vivid scarlet, large, disposed in coloured panicles. *l.* roundish-cordate, glossy dark green. *h.* 6ft. Ceylon. Stove shrub, very ornamental when in flower. (B. R. 30, 19.)

C. myricoides (Myrica-like). *fl.* white, blue, disposed in fascicled axillary cymes. Spring. *l.* oblong-lanceolate or obovate, toothed. Tropical Africa. A dwarf stove shrub. SYN. *Cyclonema myricoides.*

FIG. 475. CLERODENDRON SQUAMATUM, showing Flowering Branch and Single Flower.

C. paniculatum (panicled). *fl.* scarlet, disposed in a large pyramidal terminal panicle. August. *l.* large, long-stalked, cordate-hastate, lobed at the margin, and somewhat shiny above. *h.* 6ft. Java, 1809. A very handsome stove shrub. (B. R. 406.)

C. scandens (climbing).* *fl.* white; corymbs many, axillary, and terminal. August. *l.* cordate-ovate, acuminate, entire. Plant downy; stems tetragonal, scandent. Guinea, 1822. Stove. (B. M. 4354.)

C. serotinum (late). *fl.* pure white, sweet-scented, produced in large corymbose panicles, 1ft. or more across; calyx rose-coloured, angular. *l.* cordate, decussate. *h.* 10ft. China, 1867.

Clerodendron—*continued.*

A much-branched greenhouse or half-hardy shrub. (R. H. 1867, 351.)

C. Siphonanthus (siphon-flowered). Tube Flower. *fl.* white. *h.* 6ft. India, 1796. Stove. SYN. *Siphonanthus indica.*

C. speciosum (showy).* *fl.* rich deep rose; calyx large, suffused with red. *l.* oblong-ovate, glabrous. A very ornamental climbing hybrid. (I. H. 593.)

C. splendens (splendid).* *fl.* scarlet; panicle terminal, corymbose. June, July. *l.* oblong, wavy, acuminated, rather cordate at base Sierra Leone, 1839. Stove climber. (B. R. 28, 7.)

C. s. speciosissima (showiest).* *fl.* bright scarlet, disposed in panicles. Summer. *l.* somewhat oblong, of a deep shining green. A very handsome form of the foregoing species, and one of the best stove climbers grown.

C. squamatum (scaled).* *fl.* bright scarlet, produced in large coloured branching panicles. Summer. *l.* roundish-cordate. *h.* 10ft. China, 1790. A very fine stove shrub. See Fig. 475. (B. R. 8, 649.)

C. Thomsonæ (Mrs. Thomson's).* *fl.* bright crimson, disposed in large panicles; calyces pure white. *l.* ovate, acuminate, smooth, dark green, opposite. *h.* 12ft. Old Calabar, 1861. On account of the brilliant colour of its flowers, and the freedom with which they are produced, this is the most widely grown stove climber of the genus. (B. M. 5313.)

C. trichotomum (three-forked). *fl.*, calyx red, inflated; corolla white; cymes loose, terminal, long-stalked, trichotomously-branched. September. *l.* stalked, ovate, tapering at both ends, serrate. *h.* 6ft. Japan, 1800. A very handsome hardy shrub. (B. M. 6561.)

C. viscosum (clammy). *fl.* white, with flesh-coloured centre; calyx large, five-cornered, viscid; segments of corolla nearly equal, the uppermost a little the largest, irregularly disposed, looking all upwards, leaving a wide space between two of them. May to August. *l.* cordate, toothed. Somewhat downy. *h.* 6ft. India, 1796. (B. M. 1805.)

CLETHRA (from *Klethra*, the Greek name of the Alder; in allusion to the resemblance in the leaves). ORD. *Ericaceæ.* Very ornamental deciduous greenhouse or hardy shrubs or trees. Flowers bracteate; corolla so deeply five-parted as to appear made up of five free petals. Racemes terminal, solitary, or paniculate. The hardy species thrive best in loam and sandy peat, without dung. From their dwarf and neat habit, they are well adapted for growing in the front of shrubberies, where the proper soil is present. They are usually increased by layers, put down in autumn; but cuttings root readily at the same season, in sandy soil, under a hand glass. The greenhouse species are very suitable for large conservatories, for which purpose few plants are more beautiful than *C. arborea*; they thrive in the soil above recommended, and cuttings taken from half-ripened wood will root freely in gentle heat. All may be raised from seed, which, in most of the species, ripen in abundance.

C. acuminata (taper-pointed).* *fl.* white, fragrant; racemes spicate, almost solitary, bracteate, clothed with white tomentum. July to October. *l.* oval, acuminated, bluntish at the base, serrated, glabrous on both surfaces, rather glaucous beneath. *h.* 10ft. to 15ft. Carolina, 1806. Hardy shrub.

C. alnifolia (Alder-leaved).* *fl.* white; racemes spicate, simple, bracteate, clothed with hoary tomentum. July to September. *l.* cuneate-obovate, acute, coarsely serrated above, glabrous on both surfaces, and of the same colour. *h.* 3ft. to 4ft. United States, 1731. Hardy shrub. (G. W. P. A. 22.)

C. arborea (tree). *fl.* white; racemes spike-formed, panicled at the tops of the branches. August to October. *l.* oblong, attenuated, lanceolate, glabrous on both surfaces, serrated. *h.* 8ft. to 10ft. Madeira, 1784. Greenhouse tree. (B. M. 1057.) There are two varieties of this species, one a smaller kind, and the other with variegated leaves.

C. paniculata (panicled).* *fl.* white, fragrant; panicle terminal, elongated, composed of racemes, and clothed with white tomentum. July to October. *l.* narrow, cuneate-lanceolate, acute, acuminately serrated, glabrous on both surfaces. *h.* 3ft. to 4ft. Carolina, 1770. Hardy shrub.

C. scabra (rough). *fl.* white; racemes spicate, sub-panicled, bracteated, finely tomentose. July to October. *l.* broad, cuneate-obovate, acute, scabrous on both surfaces, coarsely serrated; serratures hooked. *h.* 3ft. to 4ft. Georgia, 1806. Hardy shrub.

C. tinifolia (Tinus-leaved). *fl.* white; racemes spike-formed, panicled at the tops of the branches, tomentose. Summer. *l.* oblong-lanceolate, quite entire, hoary beneath. *h.* 12ft. to 14ft. Jamaica. 1825. Greenhouse tree.

Clethra—*continued.*

C. tomentosa (tomentose).* *fl.* white; racemes spicate, simple, bracteate, villously tomentose. July to October. *l.* cuneate-obovate, acute, finely serrated at top, clothed with white tomentum beneath. *h.* 3ft. to 4ft. Virginia, 1731. Hardy shrub. (W. D. B. 39.)

CLEYERA (named after Andrew Cleyer, M.D., a Dutch physician of the seventeenth century, once resident in Batavia). ORD. *Ternströmiaceæ.* Greenhouse evergreen shrubs, with the habit of *Ternströmia.* Flowers small, axillary, stalked, sometimes fragrant. Leaves alternate, undivided, leathery, similar to those of a Camellia. For culture, &c., *see* **Ternströmia.**

C. japonica (Japanese). *fl.* whitish-yellow, fragrant, axillary, solitary. *l.* oblong-lanceolate, veinless, serrulated at the apex. *h.* 6ft. Japan, 1820. (S. Z. F. J. 81.)

C. j. tricolor (three-coloured). *l.* dark green, with longitudinal and oblique bands of greyish-green; margin creamy-white, and tinged with bright rose-colour, which is very conspicuous in the younger foliage. A very handsome variegated greenhouse plant.

C. theoides (Tea-like). *fl.* cream-white, drooping, ½in. in diameter, solitary, on axillary, one-flowered peduncles. September. *l.* alternate on short petioles, coriaceous, elliptic-lanceolate, acute, serrated. *h.* 4ft. to 5ft. Jamaica, 1850. SYN. *Freziera theoides.* (B. M. 4546.)

CLIANTHUS (from *kleios*, glory, and *anthos*, a flower; referring to the handsome flowers). Glory Pea; Glory Vine; Parrot Beak. ORD. *Leguminosæ.* A genus containing a couple of species, one of which is a half-hardy evergreen, tall-growing, climbing shrub, and the other an herbaceous perennial. Flowers brilliantly coloured, large, about 2in. long, in short pendulous axillary racemes; petals acuminate; standard or vexillum reflexed. Leaves impari-pinnate; leaflets small, numerous, oblong; stipules foliaceous, adnate, permanent. These plants, with truly gorgeously-coloured flowers, were, at one time, extensively cultivated in the greenhouse; but, from their great liability to the attacks of red spider, and the difficulty often found in cultivating one of the species—*C. Dampieri*—they have now become somewhat neglected. Spider may be kept down considerably by syringing with clean water daily throughout the growing season. Scale sometimes attacks the plants, but careful hand-picking, and sponging with Fowler's Insecticide, prevent these doing much injury. Loamy soil, with a little leaf soil and charcoal added, is most suitable for Clianthus. It should not be sifted, but broken up by hand, and pressed firmly in the pots. After potting, the plants should be placed in a pit with other hard-wooded subjects, and kept close for a few weeks, being syringed daily. *C. Dampieri* is a very fastidious subject in a young state, as injury to the roots invariably causes the death of the plants. When allowing more root room, the plan is sometimes adopted of knocking the bottom out of the old pot, and placing the ball with the remainder in the new soil. Training must be regularly attended to, in order to keep the bases of the plants well furnished, as the wood, when old, is very liable to break off. If it is desirable to keep the plants in pots, they can be either trained out on sticks or a trellis, or on pillars or walls, for which purpose they are well adapted. Thorough drainage must be insured when planting out, and the compost may be the same as for potting, a depth of about 18in. being sufficient. Abundance of water must be given at the roots, and the syringe freely used. When grown in pots, the plants will require shifting annually during March or April, previous to which all the laterals should be pruned hard back, and the leading shoots also shortened. The same treatment as regards pruning applies to those planted out. Cuttings of *C. puniceus* strike easily in sand, on bottom heat. When established, this species grows vigorously, and forms a fine subject for a rafter in the conservatory, or for pot culture. *C. Dampieri* is best raised from seeds, which should be sown singly, in good-sized pots, when the necessity of first shifting will be obviated. Pots 5in. in diameter are none too large; and if the seeds

Clianthus—*continued.*

are sown in these, late in summer, the plants may remain until the following spring, when they should be potted on, without disturbing the roots in any way, into the full size in which they are to flower. *C. puniceus* especially, and sometimes *C. Dampieri*, will grow well out of doors in the south-western counties, when trained against a wall; but sufficient protection should always be given during the winter to prevent injury from frost. In Ireland, their hardihood is substantially the same.

C. carneus (flesh-coloured). *See* **Streblorhiza carnea.**

FIG. 476. CLIANTHUS DAMPIERI, showing Habit and Side View of Single Flower.

C. Dampieri (Dampier's).* Glory Pea. *fl.* red, with a black or dark purple blotch at the base of the standard, 4in. or 5in. across when expanded, five or six together; racemes drooping. March. *l.* neatly winged, silvery-grey, villous. *h.* 2ft. North and South Australia and New South Wales, 1852. Herbaceous perennial. When planting this outside, a hot, dry, and sunny position under a south wall should be selected, and the plant should be kept as dry as possible. See Fig. 476. (B. M. 5051.) *C. D. marginata* is the best of several varieties now in cultivation; in this form, the ground is white, bordered with red, and the spot black. 1866.

C. puniceus (reddish).* Parrot's Bill. *fl.* scarlet, very freely produced; keel large, boat-shaped, with a long beak. May. *l.*, leaflets alternate, oblong, retuse, coriaceous. Plant branched, shrubby, clothed with appressed silky hairs. *h.* 3ft. New Zealand, 1832. Half-hardy climber. This has not yet been discovered in a truly wild state, but it is a favourite with the Maories, who grow it near their habitations. (B. M. 3584.) *C. magnificus* is a strong-growing variety of this species.

CLICK BEETLES (*Agriotes lineatus*, *A. obscurus*, &c.). These Beetles are long, narrow, slaty-brown, black, or reddish. They may frequently be observed on grass land during summer. The common name is derived from the fact that the Beetle, when laid on its back, recovers its position by a spring, which is accompanied by a peculiar "clicking" sound. The grubs—Wireworms—of these Beetles are amongst the most destructive pests to both farm and garden crops.

The following remedies may be recommended for the extermination of the grubs. For fuller particulars, *see* **Wireworms.**

Traps, such as carrots, or slices of potato or turnip, placed about numerously in the ground, and carefully looked over every day, will greatly help to effect a clearance.

Nitrate of Soda, or *Salt*, may be applied to land intended for farm crops. It will tend to destroy the Wireworms where they exist in large quantities, and will also act as a manure.

CLIDEMIA (named in honour of Cleidemus, an ancient Greek botanist). ORD. *Melastomaceæ*. Hispid or hairy shrubs, from tropical America. Flowers white, rose-coloured, or purple, paniculate or in axillary clusters, rarely terminal. Leaves usually crenated, three to seven-nerved. The genus contains about forty species, few of which are of any horticultural value.

Clidemia—*continued.*

CLIMATE. This term denotes the particular modification, constitution, or state of the atmosphere of any region or country, relative to heat, wind, moisture—in fact, all meteorological phenomena. The climatal influence exercised over plants is very marked. When acclimatising any plant, it is, as a rule, desirable to imitate, as closely as possible, those conditions of soil and temperature under which it exists in Nature. This is especially the case as regards the constitution of the soil and drainage. Of course, in estimating the temperature required for any plant, its natural habitat must be correctly known, both as to latitude and altitude. These are points which, if followed generally, would save much disappointment and loss. The climatal conditions of the locality should be one of the gardener's chief studies.

CLIMBERS are plants which attach themselves to some support, by means of tendrils, petioles, roots, &c., and must be technically distinguished from twiners, which rise by twisting their stems round any support.

CLINTONIA (named in honour of De Witt Clinton, at one time Governor of the State of New York). ORD. *Liliaceæ*. Lovely and interesting herbaceous perennials, admirably adapted for borders. They should be included in every collection of choice hardy plants. Clintonias thrive in sandy peat, in a damp, shady situation. Propagated by division of the roots, in spring. (The genus very commonly known as *Clintonia* (Douglas), belonging to *Lobeliaceæ*, is more properly called *Downingia*, as the *Clintonia* of Rafinesque has priority over that of Douglas). *See* **Downingia.**

C. Andrewsiana (Andrews's).* *fl.* deep rose-coloured, bell-shaped, from ½in. to 1in. in length, disposed in umbels, succeeded by blue berries. *l.* broadly oblong to oblanceolate, acute or acuminate. *h.* 2ft. California.

C. borealis (Northern). *fl.* yellowish-green, in a small terminal umbel. May. *l.* radical, elliptical, ciliate. *h.* 1ft. North America, 1778. SYN. *Smilacina borealis*. (B. M. 1403.)

C. pulchella. *See* **Downingia pulchella.**

C. umbellata (umbelled). *fl.* whitish, disposed in a capitate umbel, on a leafless scape. May. *l.* radical, oblong, ovate, deep green. *h.* 6in. North America, 1778. SYN. *Smilacina borealis* var. (B. M. 1155.)

C. uniflora (one-flowered).* *fl.* white, usually solitary, rarely two, nearly 1in. long, pubescent. July. *l.* lanceolate, acute, attenuated below, much longer than the peduncle. *h.* 6in. North America. SYN. *Smilacina uniflora*. (H. F. B. A. 2, 190.)

CLITORIA (from *clitoris*, an anatomical term, a resemblance to the object denoted by which has been fancied to exist in the flower). Including *Ternatea*. ORD. *Leguminosæ*. Very handsome stove evergreen climbers. Flowers axillary, pedicellate, large, elegant. Leaves impari-pinnate, having two to numerous pairs of leaflets; but usually the leaves are pinnately-trifoliolate, and the leaflets stipellate. They thrive in a compost of peat, loam, and sand. Cuttings of stubby side shoots will root in sandy soil, if placed in heat, and covered with a bell glass; but the best method of increasing them is by seeds, which occasionally ripen in this country.

C. braziliana (Brazilian). *fl.* pink, large; pedicels twin, one-flowered; bracts ovate, longer than, and hiding, the calyx. July. *l.* pinnately trifoliate; leaflets ovate-oblong, glabrous. Brazil, 1759.

C. heterophylla (various-leaved).* *fl.* blue; pedicels solitary, one-flowered; bracteoles small, acute. July. *l.* impari-pinnate, with two to four pairs of roundish, ovate, or linear leaflets. Tropics everywhere, 1812. (B. M. 2111.)

C. mariana (Maryland). *fl.* pale blue and flesh-coloured; pedicels solitary, one to three-flowered; bracteoles lanceolate, smooth. August. *l.* pinnately trifoliate; leaflets ovate-lanceolate. United States, &c., 1759.

C. ternatea (three-leafleted).* *fl.* very curious and beautiful, being of a clear azure, set off by a horseshoe-shaped ring of pure white; pedicels solitary, one-flowered; bracteoles large, roundish.

Clitoria—*continued.*

July. *l.* impari-pinnate, with two to four pairs of oval or ovate leaflets. India, 1739. SYN. *Ternatea vulgaris.* (B. M. 1542.) There are varieties of this species with blue and white flowers, and also variegated with those colours.

CLIVIA (named after a Duchess of Northumberland, a member of the Clive family). ORD. *Amaryllideæ.* SYN. *Imantophyllum* (often erroneously written *Imatophyllum*). Handsome greenhouse evergreen bulbs, requiring a high temperature and plenty of moisture when growing. During the season of rest, they need very little heat or moisture, only just enough of the latter to keep the soil from being dust-dry. Propagated by divisions, or by seed. There are three species, all natives of South Africa, the best being the one here described.

C. Gardeni. *See* **Imantophyllum Gardeni.**

C. miniata. *See* **Imantophyllum miniatum.**

C. nobilis (noble).* *fl.* red, yellow, forty-eight to fifty in a pendulous umbel; perianth tubular, segments imbricate, outer shorter than inner. May. *l.* distichous, coriaceous, strap-shaped, sheathing at base, retuse and oblique at apex; margin rough, *h.* 1½ft. 1823. SYN. *Imantophyllum Aitoni.* (B. M. 2856.)

CLOCHES. *See* **Bell Glasses.**

CLOMENOCOMA MONTANA. *See* **Dysodia.**

CLOUDBERRY. *See* **Rubus Chamæmorus.**

CLOUD GRASS. *See* **Agrostis nebulosa.**

CLOVE, or **CLOVE PINK.** *See* **Dianthus Caryophyllus.**

CLOVER. *See* **Trifolium.**

CLOVE-TREE. *See* **Caryophyllus.**

CLOWESIA (named after the late Rev. J. Clowes, at one time an extensive orchid grower, and in whose establishment the genus first flowered in this country). ORD. *Orchideæ.* An interesting little stove epiphytal orchid, allied to *Catasetum,* and requiring the same treatment.

C. rosea (rosy). *fl.* delicate white, tinged with pink; scapes radical, many-flowered, erect, shorter than the leaves. March. Pseudo-bulb fleshy, leafy. *h.* 3in. Brazil, 1842. (B. R. 29, 39.)

CLUBBING. The formation of protuberances on roots, particularly those of the *Brassica* tribe, proving the most destructive disease these are subject to. It is generally caused by some insect. *See* **Cabbage.**

CLUB GALL WEEVIL. *See* **Cabbage Gall Weevil.**

CLUB MOSS. *See* **Lycopodium.**

CLUB RUSH. *See* **Scirpa** and **Typha.**

CLUMPS. This term is applied to groups of two or more trees, shrubs, or other plants, arranged to form an isolated mass. It may extend to almost endless combinations in landscape gardening, from a conspicuous group of fine trees in a park to one of small shrubs on a lawn. In selecting a position, or planting a Clump of any description, attention should be given to surrounding conditions, and forethought exercised as to its appearance when fully developed. This especially applies to planting Clumps of permanent trees. Rhododendrons are probably most largely grown as Clumps on lawns; but many other shrubs are very useful and attractive, if arranged in this way. Overcrowding should, in all cases, be avoided.

CLUSIA (named in honour of Charles de la Cluse, or Clusius, of Artois, an acute botanist, author of "Historia Plantarum," and many other works; born in 1526, and died in 1609). Balsam-tree. ORD. *Guttiferæ.* Stove evergreen trees and shrubs, often epiphytal, with large, coriaceous, opposite leaves, and usually tetragonal stems, abounding in viscid juice. There are about sixty species, nearly all natives of tropical parts of the Western hemisphere. They grow well in light sandy soil. The pots will require to be thoroughly drained. Cuttings of half-ripe shoots will strike in sand, if placed under a bell glass, and given plenty of bottom heat.

C. alba (white). *fl.* white. *h.* 30ft. West Indies, 1752.

C. flava (yellow). *fl.* yellow. *h.* 30ft. Jamaica, &c., 1759.

Clusia—*continued.*

C. rosea (rose-coloured). *fl.* beautiful rose-coloured, large; calyx the same colour, five to six-leaved; tops of dense nectaries awl-shaped. July. *l.* obovate, obtuse, veinless, sometimes emarginate, on short, striated petioles. *h.* 7ft. to 20ft. Carolina, 1692 (on rocks and trees).

CLUSTER CHERRY. An old name for the Bird Cherry. *See* **Cerasus Padus.**

CLUSTER-FLOWERED YEW. *See* **Cephalotaxus.**

CLUSTER PINE. *See* **Pinus Pinaster.**

CLUYTIA (named after Outgers Cluyt, 1590-1650, a Dutchman, who was Professor of Botany at Leyden). ORD. *Euphorbiaceæ.* Greenhouse evergreen shrubs, with white flowers. They thrive in a compost of sandy loam and fibry peat. Cuttings of small side shoots will root in sand, over a layer of sandy peat, covered with a bell glass; points of shoots, before they become hard, will serve as substitutes for cuttings, when the latter are not obtainable. This genus contains about thirty species, from tropical and Southern Africa; they are of little beauty or interest, and those which have been introduced are rarely seen in cultivation out of botanical gardens.

CLYPEATE. Scutate; shaped like a Roman buckler.

FIG. 477. FRUITING BRANCH OF CNEORUM TRICOCCUM.

CNEORUM (from *Cneoron,* a name given to some shrub resembling an Olive, by Hippocrates and Theophrastus). Widow-wail. ORD. *Simarubeæ.* Very ornamental greenhouse or half-hardy evergreen sub-shrubs, with axillary yellow flowers and entire linear-oblong leaves. They thrive in a compost of peat and fibry loam, to which a little silver sand has been added. Ripened cuttings root freely, about April, in sand, under a bell glass. Cneorums succeed fairly well outside, in an open border, in the southern counties; but in more northern localities, they require the shelter of a south wall. The genus is confined

Cneorum—*continued.*

to the Mediterranean region and the Canary Islands. It comprises but the two species here described.

C. pulverulentum (powdery).* *fl.* axillary; pedicels adnate to the base of the bracts. April to September. *l.* linear, entire. *h.* 1ft. to 3ft. Teneriffe, 1822. Plant covered with greyish powder.

C. tricoccum (three-berried). Spurge Olive. *fl.* axillary; pedicels not adnate to the bracts. *h.* 1ft. to 2ft. South Europe, 1793. Plant smooth. See Fig. 477.

CNESTIS (from *kneo*, to scratch; in allusion to the capsules being covered on the outside with stinging hairs). ORD. *Connaraceæ*. Ornamental stove evergreen shrubs or small trees, with axillary, racemose, rarely paniculate inflorescence, and impari-pinnate leaves. All are natives of tropical and Southern Africa, Madagascar, and the islands of the Indian Archipelago. They require a compost of loam and peat, both of which should be fibry, with the addition of a small quantity of sand. Cuttings of ripe young shoots will root in sand, if placed in bottom heat, and covered with a bell glass. About ten species are known to science; perhaps not one is now in cultivation in this country.

CNICUS (from *chnizein*, to injure; alluding to the prickly armature of the plant). Thistle. SYN. *Cirsium*. ORD. *Compositæ*. A genus containing about 200 species of annual, biennial, and perennial herbs, of which but very few are in cultivation, and still fewer are worth the trouble of growing. Pappus deciduous, feathery; involucre swelling, imbricated with spinous scales; receptacle hairy. They are all of the easiest culture in ordinary soil. Propagated by seeds, sown in spring.

C. acaulis (stemless).* *fl.-heads* purple; involucre ovoid, glabrous. Summer. *l.* stalked, glabrous, radical, lanceolate, pinnatifid; lobes sub-trifid, spinous. *h.* 2ft. Europe (Britain). Perennial. (Sy. En. B. 692.)

C. altissimus (tallest).* *fl.-heads* purple; involucre bracteate, ovate. August. *l.* sessile, oblong-lanceolate, scabrous, downy beneath, toothed, ciliated; radical ones pinnatifid. *h.* 3ft. to 10ft. United States, 1726. Hardy herbaceous perennial. (G. C. n. s., xi. 437.)

C. ambiguus (ambiguous). *fl.-heads* purple. July and August. *l.* ciliate, spiny, downy beneath; lower ones stalked, oblong, acuminate, sub-sinuate; upper ones pinnatifid, auricled. *h.* 2ft. Tyrol, &c., 1820. Hardy perennial.

C. benedictus (blessed). Blessed Thistle. An ornamental biennial, with large deep green leaves, which are blotched and marbled with silvery-white. South Europe. This plant now forms a genus by itself; its proper name is *Carbenia benedicta*.

C. ciliatus (ciliated). *fl.-heads* purple; involucre ovate. August. *l.* amplexicaul, hispid, pinnatifid; segments two-lobed, spreading, spiny, downy beneath. *h.* 3ft. Siberia, 1787. Hardy perennial.

C. conspicuus (conspicuous). *fl.-heads* scarlet, large and very handsome, terminal; involucre long, conical. *l.* alternate, sessile; lower ones 6in. to 8in. long, deeply pinnatifid, or even bipinnatifid; margin waved and sinuated, and armed with short brown or purplish spines. Stem 3ft. to 6ft. high, erect, much branched, angled and furrowed. Mexico. Biennial. SYN. *Erythrolæna conspicua*. (B. M. 2909.)

C. discolor (two-coloured). *fl.-heads* pale purple, rarely white; involucre globose, with cobweb down. July, August. *l.* sessile, pinnatifid, hairy, downy beneath; segments two-lobed, spreading, spiny. *h.* 2ft. United States, 1803. Biennial.

C. Douglasii (Douglas's). A synonym of *C. undulatus*.

C. eriophorus (wool-bearing). *fl.-heads* purple; involucre woolly, spherical. July. *l.* sessile, pinnatifid, every other segment pointing upwards, spiny, scabrous. *h.* 2ft. Europe (Britain). Biennial. (Sy. En. B. 687.)

C. Grahami (Graham's). *fl.-heads* rich crimson, large. *l.* lanceolate, sinuate, spiny-toothed, snow-white beneath. *h.* 3ft. to 5ft. New Mexico, 1871. A handsome thistle, with slender-branched snow-white stems. Biennial.

C. spinosissimus (most spiny).* *fl.-heads* pale yellow, terminal, clustered. June to August. *l.* amplexicaul, pinnatifid, toothed, spiny, pubescent. Stem simple. *h.* 3ft. Europe, 1759. Hardy perennial. (B. M. 1366.)

C. undulatus (undulated).* *fl.-heads* purple, corymbose, scarcely rising above the leaves; scales of the involucre smooth, purplish, spiny at the point. Summer. *l.* pinnatifid, the lateral lobes elongated, often bifid, terminal lobe elongated; more or less spiny. *h.* 1ft. California. Perennial. SYN. *C. Douglasii*.

COARCTATE. Pressed together.

COBÆA (named after B. Cobo, a Spanish botanist). ORD. *Polemoniaceæ*. Very ornamental rapid-growing greenhouse or conservatory perennials. Flowers large, campanulate, solitary, and axillary; calyx foliaceous, persistent. Leaves pinnate, with two or three pairs of leaflets, and a terminal tendril. They are readily raised from seeds, in spring, a gentle bottom heat alone being necessary if the seeds are new; old seeds are not reliable. A free and moderately rich soil is necessary. Cobæas do best if planted out, but, at the same time, they thrive in large pots. In autumn, the long shoots can be pruned back, and fresh growth will be made in spring. The general gracefulness and very floriferous habit of these plants render them peculiarly well adapted for growing against bare walls, arches, porches, &c. For outdoor culture, they are generally, and most effectively, treated as annuals. The variegated form of *C. scandens* must be increased by cuttings, taken when young, in spring, and inserted in pots of sandy soil, placed in gentle bottom heat.

C. penduliflora (drooping-flowered).* *fl.* on drooping peduncles; corolla green, campanulate, with the tube 1in. long, divided at the edge into five strap-shaped, pendulous, wavy lobes, 3in. to 4in. long, which impart to the flowers an unique appearance. December. *l.* formed of two pairs of small oblong acute leaflets. Caraccas, 1868. A graceful, slender, cool stove climber. (B. M. 5757.)

FIG. 478. FLOWERING BRANCH OF COBÆA SCANDENS.

C. scandens (climbing).* *fl.* large, campanulate, with a short dark purple tube; lobes of corolla rather spreading, broad, short, roundish, imbricated, ciliated. May to October. *l.*, leaflets three pairs, elliptic, mucronate, marginate, and slightly ciliated; lower pair close to the stem, and sub-auriculate on one side at the base. Tendrils branched. Mexico, 1792. See Fig. 478. (B. M. 851.) There is a very ornamental form, having variegated foliage.

C. macrostema, Guayaquil, and *C. stipularis*, Mexico, are two interesting yellowish-green flowered species; but those described above are the best for general cultivation.

COB NUTS. *See* **Corylus.**

COBURGIA. This is now included in the genus *Stenomesson*.

COCCOCYPSELUM (from *kokkos*, fruit, and *kypsele*, a vase; in allusion to the form of the fruit). SYNS. *Sicelium*, *Tontanea*. ORD. *Rubiaceæ*. A genus of creeping soft-wooded stove plants. Peduncles axillary, solitary, and in the alternate axils, each bearing a few-flowered head, surrounded by a short involucre. Leaves opposite, on short petioles; stipules subulate, solitary on both sides. The species are of easy culture in a mixture of peat and sand. Increased readily by separating the creeping stems.

C. campanuliflorum (bell-flowered). *fl.* bright pale blue, in axillary or terminal heads; throat yellow. *l.* roundish oval, hairy, stalked. Brazil, 1827. SYN. *Hedyotis campanuliflora*. (B. M. 2840.)

C. cordifolium (heart-shaped-leaved). *fl.* white, pubescent, disposed in almost globose heads; peduncles ultimately equalling the petioles in length. *l.* cordate, obtuse, hairy. Brazil.

C. metallicum (metallic-leaved). *fl.* white. *l.* with a metallic lustre. Guiana, 1866.

C. repens (creeping).* *fl.* blue, almost sessile, collected in the axils of the leaves; heads few-flowered; peduncles very short while bearing the flowers, afterwards becoming more elongated. May. *l.* ovate, pubescent on both surfaces. West Indian Islands, 1793. Annual.

COCCOLOBA (from *kokkos*, a berry, and *lobos*, a pod; in reference to the fruit). Seaside Grape. ORD. *Polygoneæ*. A rather large genus of stove evergreen trees, some of which are ornamental. They grow well in good loam. Cuttings (of most of the species) of ripened wood, with leaves entire, taken off at a joint, will root freely in sand, under a bell glass. The best species are given below.

C. obovata (reversed-egg-shaped). *fl.* white, green. *h.* 50ft. New Grenada, 1824.

C. pubescens (downy). *fl.* white, green. West Indies, &c., 1690.

C. uvifera (grape-bearing). *fl.* white, fragrant. *l.* orbicular, cordate, leathery, bright glossy green. *h.* 20ft. West Indies, &c., 1690. (B. M. 3130.)

COCCULUS (from *coccus*, the systematic name of cochineal, applied to this genus on account of the greater part of the species bearing scarlet berries). SYN. *Wendlandia*. ORD. *Menispermaceæ*. A genus of stove, greenhouse, or hardy evergreen climbing or twining shrubs. Cymes or panicles axillary; those bearing the male flowers usually many-flowered; those bearing the female ones few-flowered. Leaves ovate or oblong, entire, rarely lobed. They thrive well in a mixture of loam and peat. Cuttings of half-ripened side shoots will root easily in spring or summer, if planted in sand and placed in bottom heat, under a bell glass.

C. carolinus (Carolina). *fl.* greenish, in axillary racemes or panicles. July. *l.* downy beneath, ovate or cordate, entire or sinuate-lobed. *h.* 20ft. United States. Plant minutely pubescent. Hardy.

C. laurifolius (Laurel-leaved). *fl.* white, green, small; peduncles lateral and axillary, branched at the top, rather shorter than the petioles. January. *l.* oblong, acuminated, smooth, shiny. Sub-tropical Himalayas, 1820. An ornamental shrub, with bright green leaves, remarkable for being a compact bush, whilst nearly all the other species are twiners. Half-hardy.

C. Thunbergii (Thunberg's). *fl.* axillary, panicled. *l.* ovate, obtuse, with a point, under surface villous; lower leaves somewhat triangular, upper ones orbicular. Japan. Hardy.

COCCUS. *See* **Scale Insects.**

COCCUS ADONIDUM. *See* **Mealy Bug.**

COCCUS VITIS. *See* **Vine Scale.**

COCHINEAL FIG. *See* **Opuntia cochinellifera.**

COCHLEARIA (from *cochlear*, a spoon; the leaves of most species are hollowed, like the bowl of a spoon). Scurvy Grass; Spoonwort. ORD. *Cruciferæ*. Annual or perennial herbs, usually smooth and fleshy. Racemes terminal; pedicels bractless, spreading, filiform or somewhat angular. Leaves very variable; radical ones usually stalked; cauline ones often auriculate-sagittate. There are about twenty-five species, widely distributed over the temperate and cold regions of the Northern hemisphere. Cochlearias are of the simplest culture in ordinary garden soil, but scarcely any are worth growing for ornament.

Cochlearia—*continued.*

Propagated by seeds (which are produced freely by most of the species), sown in the open air, in early spring.

FIG. 479. COCHLEARIA ARMORACIA.

C. Armoracia (Horse-Radish). *fl.* white, with a spreading calyx. May. *l.*, radical ones large, oblong, crenated; cauline ones elongated, lanceolate, toothed or cut. Root large, fleshy. *h.* 2ft. Eastern temperate Europe (naturalised in Britain). See Fig. 479. For detailed culture, *see* **Horse-Radish.**

FIG. 480. COCHLEARIA OFFICINALIS

Cochlearia—*continued.*

C. officinalis (officinal). Common Scurvy Grass. *fl.* white. Spring. *l.*, radical ones stalked, cordate; cauline ones ovate, toothed, angular. *h.* 2in. to 12in. Cold regions of northern hemisphere. A pretty early spring-flowering biennial. It is a valuable anti-scorbutic. See Fig. 480.

COCHLEATE. Twisted, so as to resemble the shell of a snail.

COCHLIOSTEMA (from *kochlion*, spiral, and *stema*, a stamen; in allusion to the spirally curved stamens). ORD. *Commelinaceæ.* This genus contains but a single species, as the two plants described below are mere forms of one. A very handsome stove perennial. It thrives in a compost of peat, leaf mould, and loam, in equal parts, with the addition of a small quantity of sand. Perfect drainage and a copious supply of water—both to the roots and overhead—are essential. Propagated by seed, which are obtained in abundance by means of artificial fertilisation. The anthers will be found inside the large stamen-like organs in the centre of the flower. The seed should be sown as soon as ripe, in sandy soil, in well-drained pots, and placed in a hotbed.

C. Jacobianum (Jacob's). *fl.* blue, delicately sweet, numerous, pedicellate, crowded at the ends of the stalks in a rather short, simple, scorpioid cyme; three outer segments of the perianth unequal, oblong, obtuse, hooded at the apex; three inner segments equal, obovate, their margins fringed with long, delicate, rich purple hairs. September. *l.* rich dark green, edged with a narrow margin of purple, oblong-lanceolate, 1ft. to 3ft. long, and 6in. to 8in. broad, sheathing at the base. Andes of Ecuador, 1867. This is one of the finest introductions of late years, and equally as valuable from a horticultural point of view as it is interesting from its peculiar structure. (B. M. 5705.)

FIG. 481. COCHLIOSTEMA ODORATISSIMUM.

C. odoratissimum (sweetest-scented). *fl.*, outer perianth segments yellowish-green at the base, reddish above; inner segments large, deep blue, with a large white claw. *l.* pale green above, long, sheathing, gracefully recurved; margins bordered with red; under surface red, marked with deep red-violet lines. The scent in this form is much more powerful than in *C. Jacobianum.* See Fig. 481.

COCHLOSPERMUM (from *cochlo*, to twist, and *sperma*, a seed; in allusion to the form of the seed). ORD. *Bixineæ.* Magnificent stove evergreen trees or shrubs. Flowers yellow, large, panicled, with the peduncles articulated at the base. Leaves alternate, stipulate, palmatifid or digitate; petioles jointed at the base. They thrive well in a compost of loam and peat. Cuttings of ripened shoots, taken in April, will root in sand, if placed in bottom heat, under a hand glass; but plants raised from seed make finer trees.

Cochlospermum—*continued.*

C. Gossypium (cottony). *fl.* yellow, large. May. *l.* three to five-lobed; lobes acute, entire, tomentose beneath. *h.* 50ft. India, 1822. SYN. *Bombax Gossypium.* (B. F. S. 171.)

The other two species reputed to have been introduced are *orinocense* and *vitifolium.*

COCKCHAFERS (*Melolontha vulgaris*). The Cockchafers, or May Bugs, are very destructive, both in the larval and the perfect state. In the latter condition, they are found during the spring, generally towards the end of May. They are rarely seen out in the day, choosing night to carry on their depredations. They feed chiefly on the leaves of the Oak, Hazel, Elm, and Willow, sometimes wholly denuding them of their foliage. Cockchafers belong to the order *Lamellicornes*, the antennæ of which are

FIG. 482. FEMALE AND MALE COCKCHAFERS.

lamellated, or consisting of a series of plates (see Fig. 482). The female lays her eggs in the earth, several inches below the surface, placing them one by one in a little heap until some eighty or ninety have been deposited. The eggs are somewhat oval, and of a white or pale yellow colour. They are hatched in about a fortnight. As soon as the larva has reached its full length (see Fig. 483), it measures 1½in. or more, and is dirty white, with brown head, and blackish at

FIG. 483. GRUB OF COCKCHAFER.

the tail end. By this time, it is three and a-half years old, and has subsisted on the tender roots of the plants. It then takes the pupa form, remaining in the earth until winter is past, and the perfect beetle emerges, as previously stated, in spring.

The following are a few of the numerous remedies recommended for the extermination of this troublesome pest. Where they abound in large quantities, they may be shaken down on to cloths spread under the trees, and afterwards collected and destroyed.

Starlings. In some nurseries and other large establishments, it is customary to hang nesting boxes around, for the benefit of the starlings, who soon take to the nests. As soon as the mature Cockchafer appears above ground, the starlings are ready to receive him, and the result is comparative freedom from the insect. Rooks, partridges, and some other birds, should also be encouraged, for when the soil is dug, particularly in a slight frost, they will clear off all the grubs they can reach.

Colza. The French sow colza on the ground infested with Cockchafer grubs, and when there is a good crop, it is dug or ploughed in. We have found rape, used in this manner, very serviceable.

Nitrate of Soda and Soot. This, sown at the rate of

Cockchafers—*continued.*

2cwt. of nitrate and 30 bushels of soot per acre, materially reduces the grubs numerically, particularly if the ground has been dug level, so that the mixture gets washed into the soil equally.

Gas Lime. Applied in the proportion of 40 bushels to the acre, this will kill nearly all grubs and insects, and will also manure the ground; but it must be ploughed in deeply before sowing. It is desirable that the ground should remain vacant for some time after.

COCKROACHES (*Blatta orientalis*). These pests are frequently, but erroneously, termed Black Beetles. In its mature state, the male has wings extending only half the length of the body; the female has only rudimentary

FIG. 484. FEMALE COCKROACH.

wings (see Fig. 484); her eggs, which are about sixteen in number, are enclosed in an oblong case, which she carries about with her at first, fixed to the abdomen by a sort of gum. There are several good recipes for the destruction of these; and, although not generally so numerous as some other insects, they are sufficiently so to demand attention. It should be remembered that, like Crickets, they will not always eat the same thing, and, therefore, if one remedy fails, another should be tried.

Cockroaches—*continued.*

Traps. The ordinary beetle traps sold at shops, if baited with honey or sprinkled with beer, will catch large quantities. Basins, containing beer, or beer and water, and having a few sticks placed against the sides to form a road, will also be found successful; soda water or champagne bottles, partly filled with beer and water, or weak honey syrup, and sunk into the earth, will prove very effective traps if not too often disturbed.

COCKSCOMB. *See* **Celosia.**

COCKSPUR THORN. *See* **Cratægus Crus-galli.**

COCOA-NUT FIBRE REFUSE. This is a most useful and inexpensive material, extensively employed by gardeners for various purposes. It is described as being free from any acid, saline, or tannin principle. The more recent or fresh it is, the longer it will last, and the better it is for all purposes. Being very light and easily worked, it forms one of the best materials for plunging small pots in, either in the propagating house or frame, in winter and spring, or outside, at any time. Cuttings of tender bedding plants are propagated by thousands annually in Cocoa-nut Fibre, as they root into it very quickly. It may also be used for potting such plants as these, but not for any subjects that are to be potted permanently, as it retains too much moisture, and decomposes so quickly. As a surface covering for flower-beds in summer, and for affording protection to the roots of somewhat tender plants during the winter months, Cocoa-nut Fibre Refuse is unequalled, in cheapness or otherwise. It may be employed with much success in rendering stiff, clayey, and other unfertile soils into productive ones, and is also useful in various other ways.

COCOA-NUT PALM. *See* **Cocos nucifera.**

COCOA PLUM. *See* **Chrysobalanus Icaco.**

FIG. 485. COCOS AUSTRALIS, showing Fruiting Plant before Stem is developed, and detached Fruit.

James's Phosphor Paste. Without exception, this is one of the best exterminators. Spread on slices of bread, or mixed with honey, the insect takes it readily. Two or three applications are generally sufficient.

Arsenic. This, prepared as for ants, or mixed with boiled potatoes, parsnips, or roasted apples, will also kill almost every one in a few nights.

Bracken. The fresh cut fronds of *Pteris aquilina*, laid about, are said to drive them away.

COCOS (from *coco*, the Portuguese for monkey; in reference to the end of the nut being like a monkey's head). Cocoa-nut Tree. ORD. *Palmeæ.* A genus of elegant stove palms, which, in their native countries, grow into majestic proportions. They are unarmed trees, with smooth, ringed trunks, and pinnatisect leaves, with linear segments. Spadices appearing in the axils of the lower leaves. Drupes with a fibrous husk and a solitary seed, with three holes at the base. They thrive in a compost

Cocos—*continued.*

of two parts rich loam, one part peat, and one of sand. During the growing period, copious supplies of water must be given, the quantity of which should be gradually diminished as winter approaches. They are not so well suited for sub-tropical gardening as many other genera of palms; but, in a well-drained and sheltered spot, it is probable several of the species might prove satisfactory.

C. australis (Southern). *l.* pinnate, with very numerous linear-glaucous pinnæ. Stem erect, columnar, in old specimens 20ft. to 30ft. high. Buenos Ayres and Paraguay. A slow-growing, decidedly ornamental palm. See Fig. 485.

Cocos—*continued.*

orange-coloured nuts, enclosed in an edible pulp, about as large as an English acorn. (B. M. 5180.)

C. Romanzoffiana (Romanzoff's).* *l.* long, gracefully arched; pinnæ long, pendent, dark green. Brazil. A handsome decorative species.

C. schizophylla (cut-leaved).* *l.* pinnate, spreading, dark green, gracefully arched, 6ft. or more in height; pinnæ 2ft. long. 1in. broad; apical lobe 6in. to 8in. broad, deeply bifid; petioles bordered with red; edges armed with stout red spines. *h.* 8ft. Brazil, 1846.

C. Weddeliana (Weddel's).* *l.* 1ft. to 4ft. or more in length, gracefully arched; pinnæ disposed nearly the whole length of the petioles, long, narrow, pendent, dark green on the upper surface, glaucous beneath. Stem slender, clothed with a quantity of black netted fibres. South America. This is probably the most elegant small palm ever introduced into Europe, and one that should be in every collection of stove plants. SYNS. *Leopoldinia pulchra* and *Glaziova elegantissima*. See Fig. 486, for which we are indebted to Mr. William Bull.

FIG. 486. COCOS WEDDELIANA.

There are many other species of this genus, among which are: *capitata, comosa, coronata, flexuosa, lapidea, and oleracea.*

C. nucifera (nut-bearing). Cocoa-nut Palm. *l.* pinnate, 6ft. to 20ft. in length; pinnæ long, somewhat narrow and pendent, bright glossy green. *h.* 50ft. East Indies, 1690. A very common species in tropical countries, but somewhat difficult to cultivate in this country. (J. B. 1879, 202.)

C. plumosa (feathery).* *l.* pinnate, 3ft. to 15ft. in length; pinnæ clustered together in bunches, 1ft. to 2ft. in length, about 1in. in breadth, somewhat obtusely pointed, dark green above, glaucous below. Stem stout, straight, columnar. *h.* 40ft. to 50ft. Brazil, 1825. A highly ornamental tree, with long leaves and drooping bunches of waxy flowers, which are succeeded by quantities of

CODIÆUM (from *Codebo*, the Malayan name for one of the species). SYN. *Croton.* ORD. *Euphorbiaceæ.* A

Codiæum—*continued.*

genus of stove evergreen shrubs. Male flowers: calyx membranous, three to six (often five) parted, reflexed, imbricate; petals five, scale formed, shorter than the calyx, and alternating with as many glands; stamens numerous. Female flowers: calyx five-cleft; petals absent. Ovarium girded by five hypogynous scales at base, three-celled, a single ovule in each cell. Among ornamental-foliaged plants, few, if any, are more useful or beautiful than the different varieties of this genus, several of which, besides having magnificently-coloured leaves, are very remarkable on account of their singular form. Excepting Dracænas, no similar class of plants are more easily cultivated than Codiæums; and, as they are available for use all the year round, no stove, however small, should be without, at least, one or two varieties. When required for table decoration, they should be grown with single stems. The best way to obtain these is to take off the tops of any strong leading shoots, and form them into cuttings. They may be struck by placing singly in small pots, and covering with bell glasses, in strong, moist heat, where they will soon emit roots, without losing any of the leaves attached at the time they were inserted. When fairly struck, they should receive a little air, by tilting the glass, gradually affording more till they bear full exposure. The most useful sizes for table decoration are from 1ft. to 18in. high; and, as using the plants for this purpose often causes them to lose their lower leaves by the time they reach such a height, the tops may be again taken off and put in as cuttings. They must be grown in a very moist atmosphere, and be well attended to by watering and syringing, or red spider is sure to appear. This pest, and thrip, are the two worst enemies to contend with in growing Codiæums, and no pains should be spared to rid the plants of them so soon as they are seen, as they quickly commit irreparable damage. The most effective remedy for thrip is to dip the heads of the plants in strong tobacco water, which destroys the insects, and also their eggs. For spider, there is nothing so effectual as hand-washing, with a soft sponge and soap water. Insects increase most rapidly when the air of the house becomes too dry, or the plants suffer from want of water at the roots. Besides being of so much value for table decoration, and the embellishment of rooms generally, Codiæums are equally serviceable for furnishing conservatories and other cool houses during the summer and autumn months—a time when such fine-foliaged plants may be employed with good effect. When used in this way, they must be gradually hardened before venturing to place them out of stove heat, as they are very susceptible to cold, and sudden changes cause their leaves to fall off. The soil best suited is fibry loam, with the addition of a good sprinkling of sand, to keep it open and porous. In this, with due attention to their requirements as to water, &c., they will grow very freely. Plants required for large specimens, either for decoration or exhibition purposes, should be encouraged to make plenty of side branches, pinching the end of the leading shoot, if they do not start freely without; but, generally, they require very little assistance, as their natural growth is bushy and regular. In order to bring out to the fullest extent the rich markings of the leaves, it will be necessary to subject the plants to plenty of light, by placing on pans, or inverted pots, so as to raise them above others they may be growing amongst. One great advantage in growing Codiæums is that they can be confined to small pots, and kept to a limited size, if desired, for a great length of time. The temperature most suitable for winter is one ranging from 60deg. to 70deg., according to the state of the weather. All the undermentioned have probably originated from two or three species, and they are now generally classed by catalogue compilers under the erroneous generic term of *Croton*, from which genus the present one is not only distinct, but it belongs to a different section of *Euphorbiaceæ*.

The majority of the innumerable forms cultivated in gardens may be referred to *C. pictum*. Scarcely more than three or four *species* exist, and about these all the Codiæums may be grouped as seedling forms or sports.

C. albicans (whitish).* *l.* broad-lanceolate, 12in. to 15in., long, 2in. to 3in. broad; ground-colour dark shining green, beautifully variegated with ivory-white; under side slightly tinted with crimson. A dense-growing variety.

C. angustifolium (narrow-leaved). A synonym of *C. angustissimum*.

C. angustissimum (narrowest).* *l.* drooping, linear, 12in. 18in. long, ⅛in. to ¼in. broad, channelled, bluntish at the apex, tapering at the base; upper surface dark shining green; margins and midrib golden-yellow; under surface similar, but paler. Polynesia. SYN. *C. angustifolium*.

C. aucubæfolium (Aucuba-leaved).* *l.* dark shining green ove with yellow or somewhat crimson blotches; 6in. to 8in. long, 2in. to 2½in. wide, three to four times longer than the stalk, oblong-acuminate, tapering at the base; midrib and veins green, or slightly tinged with pink. Polynesia, 1868.

FIG. 487. CODIÆUM BARON FRANCK SEILLIÈRE.

C. Baron Franck Seillière.* *l.* very close together, thick and leathery, from 10in. to 15in. long, and from 2½in. to 3½in. broad, graceful, curved at the tip, of a brilliant green, light pink underneath when adult; the large nerves are of a pale yellow, but soon become ivory-white, as does also the petiole Stem robust, green. Plant extremely vigorous. In the young specimens, the costa, besides being large, is very frequently irregular; but in adults, it is invariably straight; the lateral nerves are of a very beautiful white, and the contrast of

Codiæum—*continued.*

colours produces a very striking effect. See Fig. 487. (R. H. 1880, p. 193.)

C. Burtonii (Burton's). *l.* lanceolate, 12in. to 15in. long, about 3in. wide at the broadest part, close set and arching, dark shining green, banded and marbled with rich golden-yellow.

C. chelsoni (Chelsea).* *l.* narrow, drooping, sometimes plain, sometimes twisted spirally; in this latter state, the variegation shows up most distinctly, being of a bright salmon-orange tint, shaded with crimson. New Guinea, 1879.

C. chrysophyllum (golden-leaved). *l.* small, yellowish. Polynesia, 1875.

C. Cooperi (Cooper's). *l.* with yellow veins and blotches, ultimately changing to red. Polynesia, 1874.

Codiæum—*continued.*

C. cornutum (horned).* *l.* eight to ten times longer than the stalks, about 1in. wide, oblong, obtuse, irregularly lobed; lobes oblong lanceolate, acute or obtuse, rounded at the base, sinuous at the margin; upper surface dark shining green, irregularly mottled with yellow; midrib deep golden yellow, excurrent near the apex into a thread-like process, ½in. long. Polynesia, 1870.

C. Crown Prince.* *l.* lanceolate, acuminate, 12in. to 15in. long, 2in. wide, bright shining green; midrib and primary veins bright golden-yellow. An erect-growing sort, sometimes having leaves beautifully marbled over the entire surface.

C. Disraeli (Disraeli's).* *l.* about 1ft. in length, marked on a green ground-colour with golden ribs and veins, broadish at the base, and throwing out two side lobes of moderate development,

FIG. 488. CODIÆUM ILLUSTRIS.

Codiæum—*continued.*

the middle lobe, which is contracted in the lower portion and broader upwards, being much longer than the others, thus becoming more or less distinctly halbert-shaped. Polynesia, 1875.

C. Dodgsonæ (Mrs. Dodgson's).* *l.* linear-lanceolate, 9in. to 12in. long, ¼in. to ¾in. broad, sometimes becoming spiral; bright green, with a very rich gold stripe centre; margins the same colour. Habit very graceful.

Codiæum—*continued.*

C. elegans (elegant).* *l.* 6in. long, ½in. wide, ten to twelve times longer than the stalk, linear-lanceolate, rather obtuse at the apex; upper surface dark green, midrib crimson or yellowish, margins slightly pink; lower surface dull green, mottled with purple. India, 1861. SYN. *C. parvifolium.*

C. Evansianum (Evans's).* *l.* bright olive-green, trilobed; midribs and veins golden-yellow; the interspaces spotted with the same colour; with age, the green deepens and changes to a bright bronzy-crimson, and the midribs, veins, and spots become a rich orange-scarlet. Polynesia, 1879.

FIG. 489. CODIÆUM NEVILLIÆ.

C. fucatum (painted). *l.* obovate-elliptic, sometimes blotched in the lower half with broad irregular patches of yellow on one or both sides of the midrib, sometimes having only a yellow midrib and yellow reticulations; petioles rose-coloured. Polynesia.

C. Earl of Derby.* *l.* suffused with bright red, trilobed; stems, petioles, and midribs of a very bright yellow.

C. eburneum (ivory-white). *l.* elliptical-lanceolate, slightly recurved, 6in. long, 1½in. in breadth, deep green, with a broad central band, from ¼in. to ½in. wide, of a clear ivory or creamy white, the white running out half way to the margin in acute projections at the bases of the principal veins.

Codiæum—*continued.*

C. gloriosum (glorious).* *l.* long, narrow, drooping; ground-colour green, variegation creamy-yellow, very variable in character. In some, there is a creamy-yellow midrib, with a band on each side; in others, the midrib is bright green; the markings are of the spotted style, with here and there large blotches of creamy-yellow, and in other parts clouded markings, of smaller confluent blotches and spots. Sometimes these conditions are reversed, and there are longish patches on which the ground-colour is creamy, relieved by a few clouded green markings. New Hebrides, 1878.

C. Goldiei (Goldie's).* *l.* broad, panduriform, and trilobed, 8in. to 10in. long, 3in. broad at the widest part, dark olive-green; midrib, primary veins, and margin deep golden-yellow.

C. grande (grand). *l.* deep green; midrib and some scattered spots yellow. Polynesia.

FIG. 490. CODIÆUM RECURVIFOLIUM.

C. Hanburyanum (Hanbury's). *l.* 15in. long, 2½in. broad, olive-green, finely marked with rich golden-yellow and rosy-crimson.

C. Hawkeri (Hawker's).* *l.* broadly lanceolate, about 6in. long, mostly, with the petioles, light creamy-yellow; margins bright green. Polynesia, 1879.

C. Henryanum (Henry's). . oblong-ovate, acuminate, 9in. long

Codiæum—*continued.*

3in. broad, dark green, suffused and mottled with golden-yellow; in some cases, the leaf s distinctly banded.

C. Hilleanum (*Hill's*).* *l.* 6½in. *long*, 2½*in. wide*, six to seven times longer than the stalk, oblong sub-spathulate, acuminate, tapering at the base; margins sinuous; upper surface shining purplish-green, midrib and secondary veins bright crimson; lower surface dull purple, veins crimson. Polynesia, 1868.

C. Hookerianum (Hooker's).* *l.* broadly ovate-lanceolate, abruptly tapering or rounded at the base; upper surface beautiful dark shining green, broken at the base with a broad blotch of golden-yellow, and with irregular projections of the same colour

Codiæum—*continued.*

running from the midrib towards the margin; midribs, young stems, and petioles golden-yellow. Erromango, 1869.

C. illustris (brilliant). *l.* green, richly maculated with golden-yellow, the central bar yellow, and the variegation irregularly distributed, so that sometimes the points are almost wholly golden; mostly three-lobed, on purplish petioles, the base being oblong, succeeded by two lateral alternate lobes, which, as well as the apex, appear to be twisted or curved, so as to acquire a sort of forked appearance. An extremely distinct and attractive plant. See Fig. 488, for which we are indebted to Mr. Bull.

C. imperator (commanding).* *l.* 12in. to 18in. long, 3in. wide

FIG. 491. CODIÆUM TRIUMPHANS HARWOODIANUM.

Codiæum—*continued.*

at the broadest part, arching, pale green, much suffused and mottled with creamy-white; petiole, midrib, and margin distinctly marked with a deep tint of the same colour.

C. imperiale (imperial). *l.* twisted, with yellow margins and blotches, changing to crimson. New Hebrides, 1875.

C. insigne (remarkable).* *l.* linear-oblong, deep green; midrib and veins beautiful golden-yellow; margins rosy-crimson. In the older leaves, the markings run in from the edge, and become suffused over the central bar, so that the colours become nearly equally balanced, in which state the foliage is very handsome.

C. interruptum (interrupted). *l.* linear-lanceolate, tapering at the base, acute or obtuse at the apex, sometimes twisted spirally below the middle, sinuous at the margin; upper surface dark purplish-green, midrib crimson; under surface purplish, midrib crimson. Polynesia, 1868.

C. irregulare (irregular).* *l.* oblong, tapering at the extreme base, dilated above, again contracted below the middle, acute at the apex; upper surface dark shining green above, with a few golden blotches, midrib golden-yellow, margin sinuous; lower surface dull green, midrib pale yellow. Polynesia, 1868.

C. Jamesii (James's).* *l.* ovate, 5in. to 8in. long, 3in. wide, dark sage-green, marbled with creamy-white and various shades of green and yellow. Very distinct, of dwarf free-branching habit.

C. Johannis (John's).* *l.* linear-lanceolate, acute, tapering at the base; upper surface slightly channelled, shining green, centre and margins orange-yellow; under surface similar, but paler. Polynesia, 1871.

C. lacteum (milk-white). *l.* oblong, spathulate, bluntly acuminate, tapering at the base; margins sinuous, whitish; upper surface dark shining green, midrib and secondary veins milky or yellowish-white; under surface dull green. Polynesia.

C. lancifolium (lance-leaved). *l.* narrow-lanceolate, 9in. to 15in. long, 1½in. broad at the widest part, dark green; midrib, margin, and primary veins pale yellow, eventually becoming reticulated with bright rosy-pink. Distinct, erect-growing.

C. limbatum (bordered). *l.* spotted and margined with yellow. India, 1873.

C. Macfarlanei (Macfarlane's). *l.* linear-lanceolate, pendulous, arching, 9in. to 12in. long, 1in. broad, dark fiery crimson when mature; young leaves rich yellow, irregularly blotched with dark green.

C. maculatum (spotted). *l.* lanceolate, sub-acuminate, tapering at the base, 10in. to 12in. long; upper surface dark shining green, irregularly speckled with yellow, midrib, secondary veins, and margins golden-yellow; under surface similar, but paler.

C. m. Katonii (Katon's). *l.* bright green, with round yellow spots. Polynesia, 1878.

C. majesticum (majestic).* *l.* rather narrow, 12in. to 18in. long, deep green, ribbed with yellow when young, the green changing with age into a deep olive, and the yellow becoming crimson. Polynesia, 1876. This plant has a very elegant drooping habit.

C. maximum (largest). *l.* oblong, acute, rounded at the base, 10in. to 12in. long; margins sinuous, yellow; upper surface bright shining green, with a few yellow blotches, midrib and secondary veins golden; lower surface dull greenish-yellow. Polynesia, 1868.

C. medium variegatum (middle variegated).* *l.* oblong, obtuse, acuminate, tapering at the base, 3½in. to 4½in. long, 1in. to 1½in. wide; margins golden, sinuous; upper surface dark shining green, midrib and secondary veins golden-yellow; under surface dull pale green. India. This species is commonly grown in gardens under the name of *C. variegatum*.

C. Mrs. Dorman.* *l.* linear-lanceolate, arching, smooth and regular, 12in. to 15in. long, ½in. broad, with a conspicuous irregular rich orange-scarlet stripe in the centre; margins green.

C. multicolor (many-coloured). *l.* of somewhat irregular form, with a shape not very unlike *C. irregulare*; in a young state light green, with yellow tracings, but in a matured state dark green, blotched with yellow, deep orange, and crimson; midrib red; secondary veins yellowish. Polynesia, 1871.

C. mutabile (variable). A synonym of *C. princeps*.

C. Nevillise (Lady Dorothy Nevill's).* *l.* oblong-lanceolate, olive-green when young, barred and marked with yellow; when mature, the yellow changes to a crimson, shaded with orange, the green becomes darker, and is suffused with a metallic hue. Polynesia, 1880. See Fig. 489, for which we are indebted to Messrs. Veitch and Sons.

C. parvifolium (small-leaved). A synonym of *C. elegans*.

C. pictum (painted). *l.* oblong, acuminate, 6in. to 9in. long; ground-colour rich crimson, irregularly blotched and spotted with bright green and black. India. (B. M. 3051.)

C. Pilgrimii (Pilgrim's).* *l.* ovate, acuminate, 6in. to 9in. long, 3in. broad, pale green, with deep golden markings, heavily suffused with rich pink.

C. Prince of Wales. *l.* pendulous, arching, slightly twisted, almost entirely pale yellow, margined and mottled with bright carmine; edges beautifully undulated; midrib and petiole bright magenta.

C. princeps (princely).* *l.* broad linear, at first green, with a yellow costa, yellow margins, and a few scattered yellow blotches

Codiæum—*continued.*

on the blade; when mature, these colours are entirely changed, the green portions into a dark bronzy hue, and all the yellow markings, including the midrib, into the richest rosy-crimson. New Hebrides, 1878. SYN. *C. mutabile*.

C. Queen Victoria.* *l.* oblong-lanceolate, 9in. to 12in. long, 2in. broad, rich golden-yellow, finely mottled with green; midrib and primary veins rich magenta, changing with age to a vivid crimson; margin unevenly banded with carmine, often extending as far as the midrib. Of free-branching habit and medium growth.

C. recurvifolium (recurved-leaved). A very fine and distinct broad-leaved variety, of dense habit, and with recurved foliage far superior to the well-known *C. volutum*. The midribs and veins, which are crimson, bordered with yellow, are much sunk, giving the upper surface of the leaves a rigid and waved appearance. The variegation is well marked, and the contrast of the different tints to the deep olive-green ground colour is very pleasing. See Fig. 490, for which we are indebted to Messrs. Veitch and Sons.

C. spirale (spiral).* *l.* spiral, 9in. to 12in. long, and about 1in. wide, pendulous; in a young state, deep green, striped up the centre with a broad band of golden-yellow; when mature, deep bronzy-green, with a deep crimson midrib. South Sea Islands, 1873.

C. Stewartii (Stewart's). *l.* obovate, rounded at the base, shortly stalked, dark olive-green, irregularly banded and margined with rich orange; midrib and petioles bright magenta. New Guinea, 1880.

C. superbiens (superb).* *l.* oblong, acute, rounded at the base; colouring exceedingly rich and unique; in the least-coloured condition, they are green, with clouded yellowish markings; as these mature, the green deepens, the yellow brightens, and the coppery-red veining and margin are brought out; subsequently, the green becomes blackish-bronze, while all the pale portions become coppery, the veins and costa being crimson. New Guinea, 1878.

C. tricolor (three-coloured).* *l.* oblong-spathulate, very acute, gradually tapering from the upper third to the base; margin sinuous; upper surface dark shining green, central portion and midrib golden-yellow, secondary veins uncoloured; lower surface dull reddish-green. Polynesia, 1868.

C. trilobum (three-lobed). *l.* three-lobed, blotched with yellow. Polynesia, 1875.

C. triumphans (triumphant).* *l.* oblong, deep green, with a golden line on each side the midrib; primary veins also golden, running into a network of the same colour towards the point; costa rich bright crimson; when fully matured, the leaves become rich greenish-bronze, and the costa an intense rosy-crimson. New Hebrides, 1878.

C. t. Harwoodianum (Harwood's). *l.* deep green, with a golden line on each side the midrib; principal veins also golden, running into a network of the same colour towards the point; costa rich bright crimson, forming a pretty contrast with the colour on either side. A fine variety from the New Hebrides. When fully matured, the leaves become rich greenish-bronze, and the costa an intense rosy-crimson, very bright and effective. See Fig. 491, for which we are indebted to Mr. Bull.

C. undulatum (undulated).* *l.* oblong, acuminate, 8in. to 9in. long, 1½in. to 2in. wide, tapering at the base, crisped or undulate at the margins; upper surface of a rich claret-colour, with crimson blotches, midrib purplish; lower surface claret-coloured, with crimson blotches, and green secondary veins. Polynesia.

C. Veitchii (Veitch's).* *l.* oblong-lanceolate, rounded at the base, about 12in. long; margins pink; upper surface dark shining green, midrib and secondary veins bright pink; lower surface claret-coloured. Polynesia, 1868.

C. volutum (rolled-leaved). *l.* with golden venation, rolled in at the tip. Polynesia, 1874.

C. Warrenii (Warren's).* *l.* spiral, linear-lanceolate, 25in. to 30in. long by 1in. to 1½in. broad, pendent, arching, dark green, irregularly mottled, and suffused with orange-yellow and carmine, which, in the old leaves, changes to crimson. Polynesia, 1880. Said to be the most graceful and best of the narrow-leaved section.

C. Weismanni (Weismann's).* *l.* linear-lanceolate, 10in. to 11in. long, tapering at the base, very acute at the apex; margins sinuous; upper surface dark shining green, with a few small golden blotches, midrib and margins golden-yellow; under surface similar, but paler green. Polynesia, 1868.

C. Williamsii (Williams's).* *l.* obovate-oblong, 12in. to 15in. long, 3in. to 4in. broad; edges finely undulated; when young, irregularly banded with yellow, and midrib and primary veins of a bright magenta colour; as they become more mature, this magenta changes to a rich violet-crimson; under surface rich crimson. One of the handsomest.

C. Wilsonii (Wilson's). *l.* linear-lanceolate, 18in. to 20in. long, 1in. to 1½in. broad, pendent, arching, bright green, irregularly suffused with rich yellow. New Guinea, 1880.

C. Youngii (Young's).* *l.* 10in. to 20in. long, and nearly 1in. wide; upper surface dark green, irregularly blotched and spotted with pale yellow and rosy-red; under surface of a uniform dark red. Polynesia, 1873.

CODLIN GRUB. *See* **Apple or Codlin Grub.**

CODLINS AND CREAM. *See* **Epilobium hirsutum.**

CODONOPSIS (from *kodon*, a bell, and *opsis*, resemblance; in reference to the shape of the flowers). SYN. *Glossocomia*. ORD. *Campanulaceæ*. A genus of glabrous herbs. Flowers whitish, yellowish, or deep purple, terminal, axillary, pedunculate. Leaves alternate or nearly opposite, ovate, acuminated, not entire, on short petioles, glaucous, rarely hoary beneath. Branches usually opposite more or less articulated at their origin.

C. clematidea (Clematis-like). *fl.* white, tinged with blue. *l.* stalked, ovate, acuminate. *h.* 2ft. to 3ft. Mountains of Asia. Hardy perennial. SYN. *Glossocomia clematidea*. (R. G. 167.)

C. cordata (cordate). A synonym of *Campanumæa javanica*.

C. gracilis. *See* **Campanumæa gracilis.**

C. rotundifolia (round-leaved). *fl.* yellowish-green, veined with dark purple, large; corolla urceolate-globose, campanulate, with an inflated tube; peduncles terminal, slender, one-flowered. *l.* petioled, opposite or rarely alternate, ovate, rather obtuse. Himalaya. A long, slender, climbing annual. (B. M. 4942.)

C. r. grandiflora (large-flowered). A very pretty variety, with a more variegated corolla than the type, the flowers very much resembling those of the Deadly Nightshade (*Atropa Belladonna*). Himalaya. (B. M. 5018.)

CŒLESTINA (from *cœlestis*, celestial; in reference to the blue-coloured flowers). ORD. *Compositæ*. This genus is now merged into *Ageratum*. Half-hardy, showy, herbaceous perennials. Pappus a membranous rim; involucre cylindrical, many-leaved, imbricated; receptacle convex, naked; florets all tubular. They are of easy culture in ordinary garden soil. Propagated by seeds and cuttings, which are easily managed in gentle warmth, in spring.

C. ageratoides (Ageratum-like).* *fl.-heads* blue. July to October. *l.* stalked, ovate, acute, rounded at base, serrated, pilose above, hairy beneath. *h.* 1ft. New Spain.

Other species are *cærulea* and *micrantha*, both blue-flowered, and natives of America; but they are scarcely worth growing.

CŒLIA (from *koilos*, hollow; in allusion to the pollen masses, which are convex outside and concave inside). ORD. *Orchideæ*. Very curious and pretty stove epiphytal orchids. Sepals distinct, equal, spreading; petals nearly equal, but a little smaller than the sepals; lip quite entire, unguiculate, continuous with the base of the column, which is short. For culture, &c., *see* **Epidendrum.**

C. Baueriana (Bauer's).* *fl.* white, fragrant; racemes many-flowered; bracts long. June. *l.* ensiform. Pseudo-bulbs ovate. *h.* 1ft. West Indies, &c., 1790. (B. R. 28, 36.)

C. macrostachya (large-spiked).* *fl.* red; racemes many-flowered; bracts linear-lanceolate, acute, squarrose; lip lanceolate, bisaccate at base. April. *l.* ensiform, plicate. Pseudo-bulbs large, almost globose. *h.* 1½ft. Guatemala, 1840. (B. M. 4712.)

CŒLIOPSIS (from *Cœlia*, and *opsis*, resemblance; resembling a Cœlia). ORD. *Orchideæ*. A stove epiphytal orchid, requiring cultivation similar to **Epidendrum** (which *see*).

C. hyacinthosma (Hyacinth-scented).* *fl.* white; point of the superior sepal, and of the petals, orange; lip white, base and apex orange, with a deep crimson blotch in the middle; foot of column purplish-crimson; peduncle arising from the base of the well-sheathed bulb, with a dense raceme of six to eight flowers, which have a most delicious Hyacinth-like scent. *l.* plaited, cuneate-oblong, acute. Pseudo-bulbs pear-shaped. Panama, 1871.

CŒLOGYNE (from *koilos*, hollow, and *gyne*, female; in reference to the female organ, or pistil). ORD. *Orchideæ*. Including *Pleione*. Very handsome stove epiphytal orchids, described as follows: A race of pseudo-bulbous orchids, conspicuous for large coloured membranous flowers, with converging and slightly spreading sepals; petals of like nature,

Cœlogyne—*continued.*

but narrower; a great cucullate lip, usually bearing fringes on its veins; and a broad membranous column. The majority of the species are what may be termed cool-house, or, at any rate, intermediate-house, plants; for, although they like a somewhat higher temperature when growing, they remain more healthy, and flower more abundantly, if kept quite cool during the resting and flowering period. Pot culture is preferable for these plants, although they may also be grown upon blocks of wood. When small, and under this latter treatment, they are apt to dwindle away, instead of increasing in size. In preparing the pots or pans, good drainage must be carefully provided, as, although Cœlogynes require and enjoy a liberal supply of water during the growing season, nothing stagnant or sour must be allowed to come near the roots. A good compost may be formed of about equal parts living sphagnum and fibrous peat, with the addition of a little silver sand. The plants should be raised upon a moderate-sized cone above the rim of the pot, and then firmly pressed down. The time for repotting or surfacing is just after the flowers are past; and, as the blooming season of most of the kinds is during winter, this will come round about the middle of February. Although, as before remarked, these plants require a copious supply of water when growing, care must be taken that it does not lie in the centre of the young shoots, or they will be very apt to decay. When the growth is fully matured, an amount of moisture just sufficient to keep the pseudo-bulbs from shrivelling, will be all that is necessary.

C. asperata (rough).* *fl.* about 3in. in diameter; sepals and petals pale cream-colour; lip ground-colour the same, richly marked with chocolate and yellow streaks and veins, which radiate from a rich orange-coloured central ridge or crest; raceme pendulous, about 1ft. long, many-flowered. Summer. *h.* 2ft. Borneo. This is a large-growing species, which requires a large pot and the heat of a warm stove to attain perfection.

C. barbata (bearded).* *fl.* snow-white, large; lip trifid, with projecting triangular acute middle lacina, three rows of narrow lamellæ on the disk, and a border of ciliæ; the lamellæ, ciliæ, and the top are altogether of a sepia-brown, verging to black, which forms an exceedingly neat contrast to the white colour of the other parts of the flowers; spikes erect. Assam, 1837. This very beautiful species requires a continuous and abundant supply of water while growing.

C. biflora (two-flowered). *fl.* white, brown. Moulmein, 1866.

C. ciliata (ciliated).* *fl.* yellow and white, with some brown markings. Autumn. A compact-growing species, with light green leaves, and producing bulbs about 4in. high.

FIG. 492. FLOWERS OF CŒLOGYNE CORRUGATA.

Cœlogyne—*continued.*

C. corrugata (wrinkled).* *fl.*, sepals and petals pure white; lip white, with a yellow plate in front, and veined with orange; racemes erect, shorter than the leaves. Autumn. *l.* twin, about 6in. long, coriaceous. Pseudo-bulbs much corrugated or wrinkled, and apple-green in colour, India, 1866. A handsome cool-house species. See Fig. 492. (B. M 5601.)

FIG. 493. CŒLOGYNE LAGENARIA.

C. corymbosa (corymbose). *fl.* pure white. February. The flower-spikes in most instances are nicely thrown above its beautiful deep green arching foliage, whilst others nestle amongst its large pseudo-bulbs. India, 1876.

C. cristata (crested).* *fl.* fragrant, 3in. to 4in. in diameter; sepals and petals snow-white; lip white, with a large blotch of rich yellow in the middle, the veins being ornamented with a golden crest-like fringe; raceme somewhat drooping, many-flowered, about 9in. long. December to March. *l.* twin, narrow, coriaceous, dark green. Pseudo-bulbs somewhat oblong, smooth, shining, apple-green colour. Nepaul, 1837. When growing, the temperature of the cool end of the Cattleya house will suit this species admirably; but during winter, it should be kept quite cool; indeed, when in flower, it may be removed to the drawing room or parlour without fear of injury, forming there a most enjoyable and attractive ornament. It must, however, be placed in the stove again before the shoots begin to grow, or the dryness of the atmosphere may cause the growths to be stunted, and thus one season's bloom would be lost. It is extremely easy to grow. One of its many admirers says, "You may take a piece, and suspend it to a piece of copper wire in a temperate library, to the level of the nose, and it shall be to that organ, and to the eye that sees it, as agreeable three weeks hence as it is to-day, by simply taking a mouthful of pure water and giving the bulb a squirt every morning without wetting the leaves." (B. R. 27, 57.) There is a variety of this plant having a pale lemon-coloured blotch upon the lip, instead of the rich yellow colour of the normal form; and another with pure white flowers (see Warner and Williams' "Orchid Album," t. 54).

C. Cumingii (Cuming's).* *fl.*, sepals and petals white; lip bright yellow, with white down the centre. *h.* 2ft. Singapore, 1840. A very pretty species, retaining its beauty for a considerable period.

C. flaccida (flaccid).* *fl.* with a somewhat heavy odour; sepals and petals white; lip white, stained with pale yellow in front, and streaked with crimson towards its base; racemes long, pendulous, many-flowered. Winter and spring. *l.* twin, dark green, coriaceous. Pseudo-bulbs oblong. *h.* 1ft. Nepaul. An erect-growing free-flowering species, of considerable beauty. (B. M. 3318.)

C. fuscescens (dark-brownish). *fl.* large; sepals and petals of a pale yellowish-brown, tipped with white; lip edged with white and streaked with orange-yellow, and having on each side of the base two spots of cinnamon-brown; raceme slightly pendulous, few-flowered. Winter. *l.* about 9in. long, broad, dark green in colour. Pseudo-bulbs about 4in. or 5in. high. Moulmein. (G. C. 1848, 71.) A variety, *brunnea*, has pure brown flowers.

C. Gardneriana (Gardner's).* *fl.* large, pure white, saving at the base of the lip, where they are stained with lemon-colour; at the base of each is a large white fleshy bract; raceme long, nodding, many-flowered. Winter. *l.* twin, lanceolate, thin, bright green, 1ft. to 1½ft. long, and 3in. wide. Pseudo-bulbs long, narrow, tapering from the base upwards, resembling long flasks. *h.* 1ft. Khasia, 1837. (P. M. B. 6, 73.)

C. Gowerii (Gower's).* *fl.*, sepals and petals snow-white; lip also white, having three parallel raised lines and a lemon-coloured blotch on the disk; raceme pendulous, many-flowered. Winter and spring. *l.* lanceolate, about 6in. long, bright green. Pseudo-bulbs ovate, shining green. Assam, 1869. A rare but lovely small-growing species, suitable for cultivation on a block of wood. It requires cool treatment.

C. Hookeriana (Hooker's).* *fl.* rose-purple, white, brown, yellow. May. *h.* 3in. Sikkim, 1878. A pretty little species of the *Pleione* section, differing from most of its fellows by producing its leaves and flowers simultaneously. SYN. *Pleione Hookeriana.*

C. humilis (humble).* *fl.* solitary, 3in. in diameter; sepals and petals white, faintly, or somewhat deeply, tinged with rose-colour; lip white, spotted and streaked with crimson and brown, and traversed by six parallel veins, which are fringed, as is also the border. Late autumn. *l.* plaited, dark green. Pseudo-bulbs ovate, dark green. Nepaul, 1866. SYN. *Pleione humilis.* (B. M. 5674.) There is a variety with yellow spots and stains on lip.

C. lagenaria (bottle-shaped). *fl.* solitary; sepals and petals lilac or rose-colour; lip large, white, striped and barred with rich crimson and yellow, and waved and crisped at the margin; scape springing from the very base of the pseudo-bulb. *l.* solitary, thin, plaited, about 6in. long. Pseudo-bulbs somewhat flask or bottle-shaped, flattened below the conical neck, and there lapping over, like the lid of a box; dark green, mottled brown, wrinkled. Khasia, 1856. SYN. *Pleione lagenaria.* See Fig. 493. (B. M. 5370.)

C. maculata (spotted).* *fl.*, sepals and petals white; lip white, beautifully barred with crimson; bracts pale green, inflated. October, November. *l.* 6in. long. Pseudo-bulbs depressed at the top, forming a kind of ring around a short thick beak, whence the leaves have fallen; partly clothed with brown scales. Khasia, Assam, &c., 1837. SYNS. *Gomphostylis candida* and *Pleione maculata.* (B. M. 4691.)

FIG. 494. CŒLOGYNE ODORATISSIMA.

Cœlogyne—*continued.*

C. Massangeana (Massange's).* *fl.*, sepals and petals light ochre-coloured; lip trifid, beautifully maroon-brown, with ochre-coloured veins; raceme pendulous, many, but loosely, flowered. Pseudo-bulbs pyriform, bearing two Stanhopea-like leaves. 1879. This species is closely allied to *C. asperata.* (F. M. n. s. 373.)

C. media (middle).* *fl.* on spikes 10in. high; sepals and petals creamy-white; lip yellow and brown. Khasia, 1837. A pretty small-growing winter-flowering species, with short round pseudo-bulbs, and leaves 7in. long.

C. ocellata (eyed).* *fl.*, sepals and petals pure white; lip curiously fringed or crested, white, streaked and spotted with yellow and brown at the base; side lobes with two bright yellow spots on each; column bordered with bright orange; racemes upright. March and April. *l.* long, narrow, bright green, longer than the racemes. Pseudo-bulbs ovate. India, 1822. A very pretty species, well adapted for block culture. (B. M. 3767.) The variety *maxima* is a very handsome form, with a raceme of about eight star-like flowers; the segments lanceolate; lip saddle-shaped, with a terminal lobe marked with yellow. 1879.

C. odoratissima (very sweet-scented).* *fl.* pure white, excepting the centre of the lip, where they are stained with yellow, sweet-scented; raceme slender, pendulous. Winter. *l.* twin, pale green, lanceolate, about 4in. long. Pseudo-bulbs thickly clustered together, about 1in. high. India, 1864. This species grows freely if not kept too warm, and will probably succeed perfectly in a cool orchid house. See Fig. 494. (B. M. 5462.)

C. pandurata (fiddle-shaped).* *fl.* upwards of 3in. in diameter, very fragrant; sepals and petals of a very lively green; lip of the same colour, having several deep velvety black raised ridges or crests running parallel upon its surface, oblong, but curiously bent down at the sides, thus assuming somewhat the form of a violin; raceme pendulous, longer than the leaves, many-flowered. June, July. *l.* bright shining green, 1ft. to 1½ft. long. Pseudo-bulbs large, broadly ovate, compressed at the edges. *h.* 1½ft. Borneo, 1853. A very curious and distinct flowering species. (B. M. 5084.)

C. Parishii (Parish's). *fl.* yellow, brown. Moulmein, 1862. (B. M. 5323.)

C. plantaginea (Plantain-leaved).* *fl.* greenish-yellow; lip white, streaked with brown. *h.* 1½ft. India, 1852. A distinct and pretty species.

C. Reichenbachiana (Reichenbach's). *fl.* large, produced in pairs; sepals and petals rose-coloured; lip rose, but shaded with purple and fringed in front with crimson. Autumn. Pseudo-bulbs larger than in any other known species, and peculiarly netted. Moulmein, 1868. A rare and very distinct species. SYN. *Pleione Reichenbachiana.* (B. M. 5753.)

C. Rhodeana (Rhode's). *fl.* white, fragrant; lip brown. Moluccas, 1867.

C. Schilleriana (Schiller's).* *fl.* solitary, 3in. long; sepals and petals yellow, lanceolate; lip oblong, contracting in the middle, expanding into a roundish two-lobed lamina, marked with regular purplish blotches. June. *l.* oblong-lanceolate, tapering to a stalk. Pseudo-bulbs small. *h.* 6in. Moulmein, 1858. (B. M. 5072.)

C. speciosa (showy).* *fl.* upwards of 3in. in diameter, mostly produced in pairs at the end of a slender peduncle; sepals and petals brownish or olive-green, the latter very long, and narrower than the sepals; lip very beautiful, both in the colour and marking, and in the exquisite fringe of the crests and margin, ground-colour yellow, variously veined with dark red, base dark brown, apex pure white. Hooker describes the peculiar lip as follows: "The form is oblong; it is three-lobed, the lateral lobes small, resembling ears, the latter and the margin of the broad two-lobed middle lobe or segment fringed. Two long crests run nearly the whole length of the lip; these are copiously fringed with pedunculated stellated hairs, and are beautiful objects for the microscope." *l.* solitary, oblong-lanceolate, thin, dark green. Pseudo-bulbs somewhat oblong. *h.* 1½ft. Java, 1845. This species is almost a perpetual bloomer. (B. M. 4889.)

C. sulphurea (sulphur-coloured).* *fl.* yellowish-green; lip white, with yellow streaks; column with a yellow blotch at its base; racemes few-flowered. Java, 1871.

C. viscosa (viscid).* *fl.*, sepals and petals white; lip white, having side-lobes broadly streaked with rich brown. Summer. *l.* dark green, tapering towards the base. Pseudo-bulbs fusiform in shape. India, 1870. A rare species, not very unlike *C. flaccida.*

C. Wallichiana (Wallich's).* *fl.* about 3in. across, sweet-scented, usually solitary; sepals and petals large, bright rose-coloured; lip of a similar hue, but striped in the centre with bands of pure white. Khasia, 1837. A very handsome dwarf species. SYN. *Pleione Wallichiana.* (B. M. 4436.)

CŒRULESCENT. Bluish.

COFFEA (from *Coffee*, a province of Narea, in Africa, where the common Coffee grows in abundance). Coffee-tree. ORD. *Rubiaceæ.* Stove evergreen trees and shrubs. Corolla tubular, funnel-shaped, with a spreading four to five-parted limb, and oblong lobes. Leaves opposite; stipules interpetiolar. They thrive in a mixture of turfy loam and sand; and require plenty of water, and ample pot room. Ripe cuttings strike freely in sand, under a hand glass, in a moist heat; and the young plants so raised produce flowers and fruit more readily than those grown from seed.

Coffea—*continued.*

C. arabica (Arabian).* *fl.* white, sweet-scented, disposed in axillary clusters of four to five. September. *l.* oval-oblong, wavy, dark green and shining above, paler beneath, acuminated. *h.* 5ft. to 15ft. Truly native in the mountainous regions of South-west Abyssinia, 1696. (B. M. 1303.)

C. benghalensis (Bengal). *fl.* white, solitary or in pairs at the extremity of the branches; corolla hypocrateriform, with a slender tube. *l.* opposite, ovate, acuminate, entire, spreading, remote, almost sessile. Branches dichotomous. Assam. (B. M. 4917.)

C. liberica (Liberian). *fl.* white, sweet-scented. *l.* similar in outline to, but very much larger than, those of Arabian Coffee. Liberia, 1875. The plant altogether is much more robust, and can be grown in hot localities in which the older *C. arabica* would not thrive. (G. C. n. s. 6, 105.)

C. travancorensis (Travancore). *fl.* white, fragrant, solitary, or three or four together in the axils of the leaves, shortly pedicelled, erect. *l.* variable in shape, from broadly ovate to lanceolate, obtuse, acute, or drawn out into a long obtuse or acute point. Branches slender, obscurely quadrangular. *h.* 3ft. to 6ft. Southern India, 1844. (B. M. 6749.)

COFFEE-TREE. *See* **Coffea.**

COHERING. Connected.

COIX (a name applied by Theophrastus to a reed-leaved plant). Job's Tears. ORD. *Gramineæ.* A small genus of curious grasses, chiefly requiring stove heat. The only species usually grown is *C. lachryma*, which is a native of India, and grows from 2ft. to 4ft. high. This is cultivated out of doors in summer, and its peculiar

FIG. 496. COIX LACHRYMA, showing Habit and detached Inflorescence.

heavy grey pearly seeds, which hang in clusters out of the sheath, give the plant quite an unique appearance. The seeds, which are about the size of a Cherry-stone, and are very hard, should be sown in heat, in February or March, or later on out of doors. See Fig. 495.

COLA (its native name). ORD. *Sterculiaceæ.* A stove evergreen tree, requiring a rich, light, loamy soil. Increased by seeds (which are about the size of a pigeon's egg); also by ripened cuttings, placed in sand, under a hand glass, in bottom heat.

C. acuminata (pointed). Cola or Goora Nut. *fl.* yellow, numerously disposed in axillary corymbose racemes. January. *l.* coriaceous, oblong-ovate, acuminated. Tropical Africa, 1868. The seeds are universally used as a condiment by the negroes of West tropical Africa and the West Indies. They are also employed in medicine, and to render putrid water wholesome. (B. M. 5699.)

COLAX. *See* **Lycaste.**

COLBERTIA. *See* **Dillenia.**

COLCHICEÆ. A tribe of *Liliaceæ* which takes its name from the principal genus, *Colchicum*, the other three genera being *Bulbocodium*, *Merendera*, and *Synsiphon.*

COLCHICUM (Colchis, in Asia Minor, is its native country). Meadow Saffron. TRIBE *Colchiceæ* of ORD. *Liliaceæ.* A genus of autumn or rarely spring-flowering

Colchicum—*continued.*

plants, allied to *Bulbocodium*, but with larger and broader leaves, which do not appear till spring. Stamens six; styles three, free, filiform; ovary deeply three-grooved. Colchicums are among the most beautiful of autumnal flowering plants, and their cultivation is of the easiest. Some growers lift annually, and store them for a month or six weeks in a dry place before planting; but this is not a good practice, as in no case must it be done till the leaves die down, which is often not before June or July; and, at the latest, they ought to be planted in August. There is less need to lift these than Crocuses, as they require little or no division. The best soil is a light sandy loam, enriched with thoroughly decomposed manure; and a rather moist situation is most favourable. On dry soils, they often suffer considerably in hot summers. Colchicums look best in masses, and should be planted not less than 3in. deep. Propagation is effected by increase of corms; or by seed, which are usually produced freely, and generally ripen in June or July. It is best to sow them as soon as ripe, or in any case not later than September. A warm, sheltered place, out of doors, should be selected, and the seed covered with ½in. of fine soil. The seed may come up during the winter, or may not vegetate till the following spring.

The choice or rare varieties may be sown in pans, and be placed for the winter in a cold pit or frame. It is well to sow thinly, so as to be able to leave the seedlings for two years in the seed pans. Throughout the summer, water carefully in dry weather up to the end of July, or until the tiny plants show signs of resting. After two years, plant out the bulbs in nursery beds, from 4in. to 6in. apart, and leave them alone till they flower, which will be in from three to five years from the time of sowing. The common Meadow Saffron (*C. autumnale*) and its varieties are most largely grown. The species itself may be purchased in large quantities tolerably cheap.

C. alpinum (alpine). *fl.* deep rose-colour, bell-shaped. Autumn. *l.* linear, erect, 2in. to 2½in. long, narrowed at the base, appearing in February and March. Corm small, one (rarely two) flowered. *h.* 1in. to 2in. Mountains of South-east France and Switzerland, 1820. SYN. *C. montanum.* (A. F. P. 1, 74, not of Linnæus.)

C. arenarium umbrosum (sand and shade loving). A synonym of *C. umbrosum.*

FIG. 496. COLCHICUM AUTUMNALE.

C. autumnale (autumn-flowering).* *fl.* bright purple, numerous, with very long tubes. Autumn. *l.* erect, lanceolate, dark green, 6in. to 1ft. long, and usually 1in. or more broad, appearing after the flowers. Corm large, egg-shaped. *h.* 4in. Europe (Britain). See Fig. 496. (Sy. En. B. 1544.) Of this species the varieties are very numerous, the best being: ALBUM, ATROPURPUREUM, DOUBLE PURPLE, DOUBLE WHITE, and STRIATUM.

C. Bivonæ (Bivone's).* *fl.* prettily marked with alternate checkers of white and purple, chess-board like, radical; segments of the perianth elliptical-oblong. Autumn. *l.* linear, grooved. South Europe.

C. bulbocodioides (Bulbocodium-like). A synonym of *C. montanum.*

C. byzantinum (Byzantine).* *fl.* pale rose-colour, six to nine to each bulb; segments elliptical-oblong. Autumn. *l.* broad, undulating, plaited, dark green, four or five. Corm large, roundish, depressed. *h.* 3in. to 4in. Levant, 1629.

C. chionense (Chios). A synonym of *C. variegatum.*

C. luteum (yellow).* *fl.* yellow, 3in. to 4in. high, with ovate perianth segments. Spring. *l.* narrow, linear-ligulate, obtuse, concave, bright green. Kashmir and Afghanistan, 1874. (B. M. 6153.)

C. montanum (mountain).* *fl.* lilac-purple or nearly white. February and March. *l.* short, narrow, lanceolate or linear, falcate,

Colchicum—*continued.*

FIG. 497. COLCHICUM MONTANUM.

reaching about as high as, and developing simultaneously with, the flowers. *h.* 3in. to 4in. Mediterranean region, 1819. SYN. *C. bulbocodioides.* See Fig. 497.

C. montanum (mountain). A synonym of *C. alpinum.*

FIG. 498. COLCHICUM PARKINSONI.

C. Parkinsoni (Parkinson's).* *fl.* white, tessellated and barred with purple. Autumn. *l.* ovate-lanceolate, wavy. Greek Archipelago, 1874. See Fig. 498. (B. M. 6090.)

C. speciosum (showy). *fl.* clear red-purple, varying to deep crimson-purple, with a white throat; tube long; perianth divisions oval. September and October. *l.* 1ft. long by 2in. to 4in. broad, elliptic, sub-erect, narrowed to the obtuse apex. Caucasus. The largest known species of the genus. Fig. 499 shows the habit and foliage. (B. M. 6078.)

C. umbrosum (shade-loving). *fl.* violaceous-purple, long-tubed. Autumn. *l.* ligulate-lanceolate, fleshy, three or many, alternate. Capsule membranaceous, oblong, acuminate, three-lobed. *h.* 4in. Crimea. SYN. *C. arenarium umbrosum.* Like most of the genus, this species produces no leaves at the time of flowering; but soon afterwards they appear, and attain in spring a length of several inches. (B. R. 541.)

C. variegatum (variegated). *fl.* rose-colour, marked with purple-violet checkers; segments lanceolate, acute. Autumn. *l.* oblong-lanceolate, channelled, margins wavy. Corm large, egg-shaped. *h.* 3in. Greece, 1629. SYN. *C. chionense.* (B. M. 1028.) There are two or three forms of this species.

Colchicum—*continued.*

FIG. 499. COLCHICUM SPECIOSUM.

COLDENIA (named after Conwallades Colden, a North American botanist, who discovered numerous new plants; these are published in the Upsal Acts for 1743). ORD. *Boraginaceæ*. A genus containing about ten species of branched prostrate herbaceous plants, natives of both the Old and New Worlds. Perhaps the only one in cultivation is *C. procumbens*—an ornamental stove trailing annual. Seed should be sown in March, in a hotbed, and the seedlings planted out singly in pots when large enough to handle. It requires a light, rich soil.

C. procumbens (procumbent). *fl.* white, axillary, usually solitary, sessile; corolla funnel-shaped; throat wide, naked; limb flat. July. *l.* alternate, cuneiform, petiolate, having one of the sides shorter than the other, coarsely serrated, plicate, beset with appressed hairs above. India, 1699.

COLEA (named in honour of General Sir G. Lowry Cole, a governor of the Mauritius). ORD. *Bignoniaceæ*. Stove evergreen shrubs. Calyx sub-campanulate, five-toothed; corolla funnel-shaped; limb divided into five spreading lobes. Fruit oblong, fleshy, indehiscent. Leaves impari-pinnate, bi- or many-jugate. They thrive in a compost of peat and loam, both of a fibry texture, and mixed with a little sand and charcoal. Cuttings of ripe shoots will root in sand, if placed in a moist bottom heat, and covered with a glass.

C. Commersoni (Commerson's). A synonym of *C. undulata*.

C. floribunda (abundant-flowering).* *fl.* yellowish-white, in fascicles, nearly sessile, rising from the old wood. August. *l.* pinnate, verticillate, eight pairs; leaflets oblong-lanceolate, pointed. *h.* 10ft. Mauritius, 1839. (*B. R.* 27, 19.)

C. undulata (undulated). *fl.* yellow and lilac, in racemes from old wood. Summer. *l.* whorled, pinnate, 2ft. to 4ft. long. Stem simple. Madagascar, 1870. SYN. *C. Commersoni*. (*R. G.* 669.)

COLEBROOKIA (named after Henry Thomas Colebrooke, F.R.S., F.L.S., &c., an accomplished botanist). ORD. *Labiatæ*. This genus contains only the two plants described below, and these probably are but forms of one species. Greenhouse evergreen shrubs, densely clothed with whitish or sub-rufous woolly tomentum. Flowers white, small: corolla tubular, contracted in the middle: cymes of whorls distinct, head-formed, dense, sessile. Leaves petiolate, oblong-elliptic, crenulated. Spikelets 1in. to 3in. long, pedunculate, panicled. They thrive in

Colebrookia—*continued.*

a compost of one part peat and two parts loam, with a small quantity of sand added, to keep the whole porous. Cuttings of half-ripened shoots, made in April or May will root in sand, under a bell glass.

C. oppositifolia (opposite-leaved). Branches, leaves, and spikes opposite. *h.* 3ft. to 4ft. Nepaul, 1820. (S. E. B. 115.)

C. ternifolia (three-leafleted-leaved). Branches, leaves and spikes three in a whorl. Leaves more tomentose, and on shorter petioles, than in the first species, and spikelets more dense. India, 1823.

COLEONEMA (from *koleos*, a sheath, and *nema*, a filament; the filaments are fixed into sheath-like recesses of the petals). ORD. *Rutaceæ*. Very ornamental small Heath-like greenhouse shrubs, from the Cape of Good Hope. Flowers white, axillary towards the top of the branches, solitary, on short peduncles. Leaves short, linear, scattered, very acute, beset with glandular dots. There are four species, all natives of South-west Africa. For culture, *see* **Diosma.**

C. album (white). *fl.* white, small. Autumn and winter. *l.* sub-erect, linear-lanceolate, channelled above, with a straight, pungent mucro. *h.* 1ft. to 2ft. A small erect, nearly glabrous, shrub.

C. aspalathoides (Aspalathus-like). *fl.* white. Autumn. *l.* linear, keeled and sub-triangular, with a recurved mucro. *h.* 6in. to 3ft.

C. juniperinum (Juniper-like). *fl.* white. Autumn. *l.* narrow linear, with a short, straight mucro, concave above, convex underneath, shining. *h.* 1ft. to 2ft.

C. pulchrum (beautiful). *fl.* large, red. Autumn. *l.* spreading or recurved, linear, with a straight, pungent mucro, the diaphanous margin serrulate. *h.* 2ft. to 4ft. (B. M. 3340.)

COLEOPTERA. *See* **Beetles.**

COLEUS (from *koleos*, a sheath; in allusion to the filaments being connected, and forming a tube at the base, which sheathes the style). ORD. *Labiatæ*. A genus of stove herbs, annual or perennial at the base, rarely suffruticose. Whorls usually six-flowered, but often many-flowered, sometimes very dense, and sometimes loose, cyme-formed. The monadelphous stamens distinguish this genus from all others of the order. The foliage of the hybrid varieties and sports of Coleus are unsurpassed for beauty of colour; and, whether grown as large or small plants, they are extremely useful for decorative purposes. Their culture is very simple, but unless a minimum temperature of 55deg. is maintained, they cannot be wintered safely. Where such conditions do not obtain, it is better to purchase plants in spring, grow them on for the season, and then throw them away.

Coleus thrive well in a compost of one-half rotten turf obtained from an old pasture, one-fourth thoroughly rotted cow manure, and the remainder of sharp sand and leaf soil in equal proportions. Pot moderately firm, and water freely when growth has commenced, giving occasional doses of liquid manure when established, especially during hot weather, as the plants then grow very rapidly. Plenty of air and light must be afforded in summer, in order to keep the plants strong and short-jointed. Care must also be taken that they do not suffer for want of water, or the lower leaves will drop off, and thus render them unsightly. Coleus grown for exhibition should be of globular or pyramidal form, with the lower leaves covering the edge of the pot, so that neither bare stems nor soil are visible. When grown for ordinary decoration, useful plants may be obtained, and the colours in the leaves more highly developed, by cultivating in comparatively small pots. Those of 5in. or 6in. diameter are large enough to produce good-sized plants that are indispensable for greenhouse or any indoor decorations in summer and autumn. Being of quick growth, and very easily propagated, the loss of a Coleus when used in decorating is of little consequence, compared with the majority of other plants. The flowers of the foliage kinds are insignificant, and the spikes, when seen, should be pinched out. The cultivation above recommended also suits the green-leaved species; but, after a few pinchings, to secure bushy plants,

Coleus—*continued.*

they should be allowed to develop their flowers, some of which are highly ornamental. Cuttings strike with the greatest freedom at almost any time of the year, and, with a good moist heat, will quickly form fine specimens. They are best placed separately in small pots, and, when rooted, may be potted on, allowing a liberal shift each time. Coleus may also be increased by seed; but this method is only adopted when it is desired to raise new varieties.

C. Verschaffeltii, a variety of *C. Blumei*, is much grown for bedding purposes, and is especially employed in large carpet-bedding designs; it is one of the most effective crimson-leaved subjects for the purpose, and, arranged with Centaurea or Golden Feather, it is very striking.

C. barbatus (bearded). *fl.* brownish, with the lower lip nearly ovate, compressed, and hairy; racemes terminal. November. *l.* oval, scalloped, downy and wrinkled, gradually narrowed into the footstalk. Stem quadrangular. *h.* 2ft. Abyssinia. Perennial. Every part of the plant has a powerful fragrance. SYN. *Plectranthus barbatus.* (A. B. R. 594.)

C. Blumei (Blume's). *fl.* purple and white, disposed in a terminal elongated whorled spike or raceme. *l.* rhomboidal ovate, membranaceous, deeply and coarsely inciso-serrate at the margin, the apex acuminate, entire as well as the base; yellowish-green in colour, the whole disk dark purple or sanguineous, breaking into spots near the margin. *h.* 1ft. to 1½ft. Java. Perennial. It is from this species that the innumerable variegated forms (so extensively grown for decorative purposes), including *Verschaffeltii*, have originated. (B. M. 4754.)

C. inflatus (inflated). *fl.* lilac, disposed in compound, subracemose spikes. December. *l.* on long petioles, opposite, ovate, sharply acuminated, very coarsely serrated. Stems and branches square; the base of the stem scarcely woody, often tinged with orange-colour and spotted with red. *h.* 3ft. Ceylon. Perennial. (B. M. 5236.)

C. Macraei (Macrae's). *fl.* variegated with white and dark purple, disposed in a large terminal panicle; corolla very curious in the sudden geniculation near the middle of the tube, in the ample and compressed throat, and especially in the large boat-shaped lower lip. Summer. *l.* ovate, acuminate, serrated, dark green above, beneath deeply purple, as are the petioles. Stems quadrangular, dark purple, branched, with opposite branches. *h.* 2ft. to 3ft. Ceylon, 1852. Perennial. (B. M. 4690.)

C. scutellarioides (Scutellaria-like). *fl.* blue, with the lower lip white and quadrifid; disposed in verticillate racemes. *l.* lanceolate-ovate, serrate, light green above, underneath brownish, as is also the stem. East Indies, North Australia, &c. A tall herb or under-shrub. SYN. *Ocimum scutellarioides.* (B. M. 1446.)

The varieties of this genus are innumerable, and a number are added each year. The following is a selection of the best kinds now in cultivation; the descriptions refer to the leaves:

ADA SENTANCE, highly coloured, good; ALLEN CHANDLER, light crimson, self-coloured, good; DISPLAY, bright magenta-crimson, blotched bronze, broadly margined with green; DUCHESS OF EDINBURGH, very dark, margined and blotched with magenta; EDITH SENTANCE, large, blotched crimson, green edge, showy; H. A. MANN, creamy-white, tinted rosy-pink; HARRY VEITCH, pale crimson and yellow, crimpled foliage; JAMES BARNSHAW, good; J. F. PAWLE, crimson, pale yellow margin; KENTISH FIRE, purplish-crimson, much divided, good; LADY BURRELL, extra fine; MISS ROSINA, magenta-crimson and yellow, highly coloured; MISS SIMPSON, extra fine; MR. G. SIMPSON, dark velvety crimson, self, one of the most distinct and best; MRS. SHARMAN, irregularly marked, yellow and crimson; MRS. STEDDALL, vivid crimson and pale green, small, fine and showy; MRS. VAUGHAN, dark crimson, broad band of pale yellow; PICTUM, small, deeply cut, pretty; PILLAR OF GOLD, much divided, yellow, tinted rose; POMPADOUR, large, prettily mottled with many colours, very distinct and good; RENOWN, light green, reticulated and irregularly mottled with dark maroon; SHAH, rose-crimson and yellow, broad, good; SUNBEAM, green, veined yellow, distinct.

COLEWORT. A name applied to varieties of the white Cabbage, before the hearts become solid.

COLLETIA (named after Philibert Collet, a French botanical writer, 1643-1718). ORD. *Rhamneæ*. Much-branched greenhouse or half-hardy shrubs. Petals absent, or very minute; calyx campanulate, coloured. Leaves, when present, simple, opposite, stipulate, deciduous, very minute, entire. Branches divaricating, decussately opposite; branchlets spiny. They are extremely curious plants, and are best grown in sheltered, isolated positions, where their peculiar character can be readily seen. A good loamy soil is most suitable. Cuttings of half-ripened wood, 6in. to 8in. in length, will root readily in well-drained pots of sandy soil, in a cool greenhouse; they should then be placed in a close, cold frame, until fully established.

Colletia—*continued.*

C. armata (armed). A synonym of *C. spinosa.*

C. Bictonensis (Bicton). A synonym of *C. cruciata.*

C. cruciata (cruciform). *fl.* solitary. *l.* very few, elliptic, quite entire. Stem very prickly; spines decussate, compressed laterally, broad, ovate acute, decurrent. *h.* 4ft. Rio de la Plata, 1824. SYN. *C. Bictonensis.* (B. M. 5033.)

C. ferox (fierce). A synonym of *C. spinosa.*

C. horrida (horrid). A synonym of *C. spinosa.*

C. polyacantha (many-spined). A synonym of *C. spinosa.*

C. serratifolia. *See* **Discaria serratifolia.**

C. spinosa (spiny). *fl.* in scattered fascicles; calyx urceolate; filaments elongated, exserted. May to July. *l.* elliptic, quite entire; spines very strong, awl-shaped. *h.* 3ft. to 10ft. Chili and Peru, 1823. SYNS. *C. armata, C. ferox, C. horrida, C. polyacantha, C. valdiviana.* (G. C. n. s., viii., p. 616.)

C. ulicina (Ulex-like). *fl.*, calyx elongated, cylindrical; fascicles crowded at the tops of the branches. Spines slender, very numerous. *h.* 2ft. to 4ft. Chili.

C. valdiviana (Valdivian). A synonym of *C. spinosa.*

COLLIER. A common name of the **Black Fly** (which *see*).

COLLINSIA (named after Zaccheus Collins, once Vice-President of the Academy of Natural Sciences of Philadelphia). ORD. *Scrophularineæ*. A small genus of about a dozen species of very pretty hardy annuals. Flowers brightly-coloured; corolla tube saccate at the base on the upper side. Leaves entire, opposite, rarely verticillate. These are excellent subjects for growing in patches and clumps; and are of very easy culture in any ordinary garden soil. Seed should be sown in the open border, late in March, or in April, and the seedlings thinned out to about 2in. apart. For spring flowering, the seed should be sown in a sheltered place during autumn, and the young plants protected, if necessary, during the winter, with a handlight, or matting.

FIG. 500. COLLINSIA BICOLOR, showing Entire Inflorescence and Single detached Flower.

C. bicolor (two-coloured).* *fl.* large; upper lip and tube of corolla white; lower lip rosy-purple; pedicels verticillate, racemose. August. *l.* glabrous, ovate-lanceolate, sub-cordate at the base. Stem erect, downy. *h.* 1ft. California, 1833. See Fig. 500.

C. corymbosa (corymbose). *fl.* numerous, disposed in an umbel-like manner; lower lip of corolla white, upper one grey-blue, very short. *l.* ovate, stalked; upper ones sessile. Habit dwarf much branched. Mexico, 1868. (R. G. 1868, 568.)

Collinsia—*continued.*

C. grandiflora (large-flowered).* *fl.*, corolla pale purple, dilated, retuse; upper lip blue; pedicels verticillate. May to July. *l.*, lower ones spathulate; superior ones oblong-linear. *h.* 1ft. Columbia, 1826. (B. R. 1107.)

C. parviflora (small-flowered). *fl.* purple, blue. June. *h.* 1ft. California, &c., 1826. Trailer. (B. R. 1082.)

C. sparsiflora (scattered-flowered). *fl.* violet. May. *h.* 1ft. California, 1836.

C. tinctoria (dyers'). *fl.* pale pink. May. *h.* 1ft. California, 1848.

C. verna (spring).* *fl.*, corolla white; lower lip blue; pedicels axillary, solitary. May. *l.* lanceolate. Stem erect, a little branched. *h.* 1ft. Eastern United States, 1855. (B. M. 4927.)

C. violacea (violet). *fl.*, corolla bright violet; upper lip paler. *l.* ovate-lanceolate, and remotely denticulated. *h.* 3in. to 1ft. Arkansas, &c., 1871.

COLLINSONIA (named in honour of Peter Collinson, F.R.S., a well-known patron of science and correspondent of Linnæus; he first introduced this and a host of other plants to English gardens). ORD. *Labiatæ.* Strong-scented, rather coarse-growing, hardy herbaceous plants or shrubs. Flowers pedicellate, solitary; pedicels opposite, disposed in simple, but usually paniculately-branched, racemes; corolla exserted, sub-campanulate. They grow well in common garden soil, but prefer sandy peat, and a moist situation. Propagated readily by dividing the roots, in spring.

C. anisata (Anise-scented).* *fl.* pale yellow; panicle dense. September. *l.* broad-ovate, a little toothed, roundly truncate at the base, wrinkled, pubescent on the nerves beneath, and on the stems, which are a little branched. *h.* 2ft. to 3ft. South United States, 1806. This species requires protection from severe frosts. (B. M. 1213.)

C. canadensis (Canadian). *fl.*, corolla yellow, four times longer than the calyx; panicles elongated, loose, many-flowered. August. *l.* broad-ovate, acuminate, rounded at the base, subcordate, glabrous. Stems branched, glabrous, or a little downy. *h.* 1ft. to 2ft. North America, 1734. This hardy perennial has a peculiar scent, which is agreeable, but very strong.

COLLOMIA (from *kolla*, glue; in reference to the seeds being enveloped in a mucilaginous substance, of a most remarkable character). ORD. *Polemoniaceæ.* This genus is allied to *Gilia*, and contains about a dozen species of very pretty hardy annuals. Flowers disposed in dense heads, propped by broad, ovate, quite entire bracts; corolla salver-shaped. Leaves alternate, the lower ones rarely opposite, rarely pinnatifid. They are of very easy culture in ordinary soil, and may be treated like **Collinsia** (which *see*).

C. Cavanillesii (Cavanilles'). A synonym of *C. grandiflora.*

C. coccinea (scarlet).* *fl.* deep red; corolla more than twice as long as the calyx. June to October. *l.* lanceolate linear; upper ones ovate-lanceolate, quite entire, or deeply two to four-toothed at the apex. *h.* 1ft. to 1½ft. Plant erect, branched, beset with glandular down. Chili, 1831. SYN. *C. Cavanillesii.* (B. R. 1622.)

C. grandiflora (large-flowered).* *fl.* of a very uncommon reddish-yellow colour, disposed in hemispherical, pruinose, clammy heads; corolla ventricose. June to October. *l.* oblong-lanceolate, entire, shining, ciliated with glands. Plant erect, branched, rather downy at top. *h.* 1½ft. to 2ft. North-west America, 1826. (B. R. 1174.)

C. heterophylla (various-leaved). *fl.* purplish, few, in sessile heads. Summer. *l.* alternate, petiolate, deeply and doubly pinnatifid; the segments lanceolate, rather acute, pubescent. *h.* 1ft. to 1½ft. North-west America, 1828. (B. M. 2895.)

C. linearis (lined). *fl.* yellowish-brown, in dense, sessile, terminal heads, surrounded by an involucre of the uppermost leaves. May to July. *l.* linear-lanceolate, lanceolate, or broadly lanceolate, the shorter ones almost ovate, alternate, patent, sessile, waved, entire. *h.* 1ft. to 1½ft. North-west America, 1828. An erect, much-branched annual. (B. M. 2893.)

COLOCASIA (from *kolokasia*, the Greek name for the root of an Egyptian plant). ORD. *Aroideæ* (*Araceæ*). A small genus of stove herbaceous plants, with a perennial tuberous or creeping rhizome. Flowers unisexual; the females at the base of the spadix, separated from the males by short ovoid neutral organs; spathe with a convolute persistent base; the lamina long-lanceolate, deciduous. Scapes and leaves radical; the lamina often very large, cordate or peltate, undivided. For culture, *see* **Caladium.**

Colocasia—*continued.*

FIG. 501. COLOCASIA ANTIQUORUM.

C. antiquorum (ancient).* Taro. *fl.*, spathe green, with the lamina or blade 6in. or more long, much longer than the spadix. *l.* ovate, more or less peltate and cordate, often above 1ft. long and broad. *h.* 2ft. East Indies (cultivated in South Europe and throughout the tropics), 1551. See Fig. 501.

FIG. 502. COLOCASIA ESCULENTA.

Colocasia—*continued.*

C. esculenta (edible).* *fl.* whitish; spadix shorter than the ovate-lanceolate spathe. *l.* peltate-cordate. *h.* 2ft. Sandwich Islands, &c., 1739. This fine species has been used with great success in sub-tropical gardening in the midland and southern counties. For this purpose, it should be planted out early in June, in thoroughly drained, warm, light and rich soil. In very hot weather, a plentiful supply of water must be administered, and occasionally liquid manure. On the approach of frost, all the leaves, except the central one, must be cut down to within 2in. of the crown. A few days after this operation, the tubers should be taken up, exposed for a few hours to the air, to become dry, and then stored away for the winter in the greenhouse, or any other frost and damp proof situation. SYN. *Caladium esculentum.* See Fig. 502.

C. indica (Indian).* *fl.* brownish; spadices axillary. *l.* ovate, bifid at base, rounded. Plant caulescent, sub-erect. *h.* 5ft. Sandwich Islands, &c., 1824. SYN. *Arum indicum.*

C. nymphæifolia (Nymphæa-leaved). *fl.*, spadix longer than the white cylindrical spathe, sagittate at the end. *l.* peltate-cordate, sagittate. Plant stemless. India, 1800.

C. odorata (fragrant).* *fl.* very fragrant; spadix as long as the white cymbiform spathe. *l.* cordate, with rounded lobes, 3ft. long. Plant caulescent. Peru, 1818. See Fig. 503.

FIG. 503. COLOCASIA ODORATA.

COLOGANIA (named after a family of the name of Cologan, who resided at Port Orotava, in Teneriffe, and from whom men of science visiting that island experienced the greatest hospitality). ORD. *Leguminosæ.* Stove procumbent or twining shrubs, beset with retrograde hairs. Flowers solitary, axillary, pedunculate, or in short racemes. Leaves pinnately trifoliolate, rarely one or five-foliolate. For culture, *see* **Clitoria.**

C. biloba (two-lobed). *fl.* violet, racemose. *l.* ternate, clothed with adpressed hairs. *h.* 20ft. Summer and autumn. Mexico. Conservatory. SYN. *Glycine biloba.* (B. R. 1418.)

C. Broussonetii (Broussonet's). *fl.* violet, twin, shortly pedicellate; calyx villous, rather five-cleft. *l.*, leaflets ovate-oblong, mucronate, rather strigose on both surfaces, paler beneath. Mexico, 1827.

Other species quoted as being in cultivation are: *angustifolia* and *pulchella.*

COLQUHOUNIA (named after Sir Robert Colquhoun, Bart., at one time resident at Kumaon). ORD. *Labiatæ.* Elegant and curious evergreen, twining or scandent, usually tomentose, not pilose, shrubs; well fitted for ornamenting rafters in greenhouses or conservatories. Whorls loose, axillary, or approximating into a terminal spike; bracts minute; corolla bilabiate, with an exserted incurved tube, and a dilated throat, naked inside. Leaves rather large, crenate; those of the upper parts of the branches, near the inflorescence, reduced to small bracts.

Colquhounia—*continued.*

A light rich soil, or one composed of equal parts loam, sand, and leaf mould, suits them well. Young cuttings will root readily, in the same kind of compost, under handlights, in summer.

C. coccinea (scarlet).* *fl.*, corolla scarlet, twice the length of the calyx; whorls few-flowered, approximating into a spike, which is leafy at the base. September. *l.* nearly glabrous, roughish, ovate, acuminated, 3in. to 4in. long. Nepaul. (B. M. 4514.)

C. tomentosa (tomentose).* *fl.* brilliant orange-red, in crowded whorls. *l.* densely covered with greyish tomentum. Nepaul. A tall branching shrub. It may be grown out of doors in warm situations, in summer. (R. H. 1873, 131.)

COLT'S FOOT. *See* **Tussilago.**

COLUBRINA (from *coluber*, a snake, in allusion to the twisted filaments of the stamens). ORD. *Rhamneæ.* Stove or greenhouse shrubs. Flowers in axillary, short, crowded cymes, or in fascicles. Leaves alternate, quite entire or crenulated, usually pubescent. The species do not possess much ornamental value, and hence are rarely seen in gardens.

COLUMBINE. *See* **Aquilegia.**

COLUMELLA. A synonym of **Pisonia** (which *see*).

COLUMELLIA (named in honour of L. Junius Moderatus Columella, a native of Cadiz, in Spain, author of one of the most valuable works on Roman agriculture; he was born about the beginning of the Christian era). SYN. *Uluxia.* The only genus of ORD. *Columelliaceæ.* It contains only two species, one of which is not yet introduced to cultivation. *C. oblonga* is a greenhouse evergreen shrub. It thrives in a mixture of loam, peat, leaf soil, and sand; and half-ripened young cuttings will strike readily in the same compost, under a hand glass, with a gentle heat.

C. oblonga (oblong). *fl.* yellow, terminal, on short peduncles; corolla rotate, with a five-lobed concave equal limb; corymbs leafy. *l.* oblong, veiny, toothed at top, attenuated at the base, shining and green above, but silky and glaucous beneath, 1in. to 2in. long. Branchlets clothed with silky down, compressed between the internodes. *h.* 20ft. Andes of Peru and Ecuador, 1875. (B. M. 6183.)

COLUMELLIACEÆ. An order of evergreen shrubs or small trees, containing but one genus—*Columellia.* Flowers with a five-lobed spreading corolla, bearing in its short tube two stamens. Leaves opposite, serrate, exstipulate.

COLUMN, or **COLUMNA.** The combination of stamens and styles into a solid central body; as in orchids.

COLUMNAR. Formed like a column.

COLUMNEA (named after Fabius Columna, or, more correctly, Fabio Colonna, an Italian of noble family; author of "Minus Cognitarum Stirpum Ecphrasis," Rome, 1616, and "Phytobasanos," 1 vol., 4to, Naples, 1592). ORD. *Gesneraceæ.* A genus of stove evergreens. Peduncles axillary, solitary, or crowded; corolla tubular, straightish, gibbous behind at the base, ringent; upper lip erect, arched; lower one trifid, spreading. Leaves decussately opposite, thickish, hairy or pubescent, somewhat serrated. Stems flexile, erect, or scandent. For culture, *see* **Æschynanthus.**

C. aurantiaca (orange).* *fl.* of the deepest and richest orange-colour; calyx pale yellowish-green. June. New Grenada, 1851. This beautiful but rare species makes an excellent basket plant; it grows well upon a lump of nearly rotten wood, which will absorb water like a sponge, and give it back gradually to the plant. (F. d. S. 562.)

Columnea—*continued.*

C. aureo-nitens (bright golden).* *fl.* deep rich orange-red. September. *l.* broadly-lanceolate, and densely clothed with golden-coloured silky-shaggy hairs. Columbia, 1843. A very distinct and singular species. (B. M. 4294.)

C. erythrophæa (bright red).* *fl.* solitary, axillary; corolla bright red, large; calyx large, spreading, blotched with red inside. November. *l.* lanceolate, tapering to a point, oblique at the base, rich deep green. *h.* 2ft. Mexico, 1858. Shrub. (R. H. 1867, 170.)

C. hirsuta (hairy). *fl.* usually twin; corolla purplish, or pale red, villous, hairy; calycine segments denticulated, hairy. August to November. *l.* ovate, acuminated, serrated, hairy above; petiolate. Jamaica, 1780. Climbing shrub. (B. M. 3081.)

C. Kalbreyeriana (Kalbreyer's).* *fl.* on short racemes; corolla yellow, exceeding the calyx in length, marked with red stripes in the interior; calyx yellow, 1½in. to 2in. long. February. *l.* opposite, lanceolate, curving downwards on either side of the stem, dull green above, somewhat spotted with pale yellow; the lower surface being of a deep claret-red. One leaf of each pair is much smaller than the other, and the large and small leaves alternate. 1882. Habit shrubby, perhaps half-climbing; stems rather thick, fleshy. (B. M. 6633.)

C. rutilans (ruddy-leaved). *fl.* corolla reddish-yellow, villous; calycine segments jagged, villous. August, September. *l.* ovate-lanceolate, denticulated, rather scabrous, hairy, and coloured beneath. Jamaica, 1823. Climbing shrub.

C. scandens (climbing). *fl.* solitary; corolla scarlet, melliferous, hairy; calycine segments denticulated, pubescent. August. *l.* ovate, acute, serrated, rather villous, petiolate. Stems quadrangular. Climbing shrub. Guiana, 1769. (B. M. 1614.)

C. Schiedeana (Schiede's). *fl.*, corolla 2in. long, clothed with glandular hairs, variegated with yellow and brown; calycine segments entire, spotted and villous. June. *l.* oblong-lanceolate, quite entire, about 5in. long, and 1½in. broad, clothed with silky hairs. Stems nodose, smoothish at bottom, but clothed with purplish hairs. Mexico, 1840. Herbaceous climber. (B. M. 4045.)

COLURIA (from *kolouros*, deprived of a tail; the seed is without the tail, so conspicuous in several allied genera). ORD. *Rosaceæ*. The only species in this genus is the hardy herbaceous perennial described below. Styles jointed, falling from the achenes when mature, not adhering as in *Geum*, to which genus it is closely related. For culture, *see* **Geum.**

C. potentilloides (*Potentilla*-like). *fl.* orange; stem one to three-flowered. June. *l.* interruptedly pinnate, the terminal leaflets large, the lateral ones unequal in size and shape, all canescent beneath; cauline ones trifid or entire. *h.* 6in. to 1ft. Siberia, 1780. This has at different times been placed under *Dryas*, *Geum*, and *Sieversia*.

COLUTEA (presumably from *koluo*, to amputate; the shrubs are said to die if the branches are lopped off; *Koloutea* is also used as the name of a plant by Theophrastus). Bladder Senna. ORD. *Leguminosæ*. A genus of deciduous shrubs, with small stipules, and impari-pinnate leaves, which are somewhat longer than the axillary few-flowered racemes. Coluteas are of the easiest culture in any common soil. They may be increased by seeds, which ripen in abundance; or by cuttings, inserted in sandy soil, in the autumn. They are chiefly valued as fast-growing shrubs which will thrive in almost any situation.

C. arborescens (woody).* *fl.* yellow; peduncles usually bearing about six flowers. June to August. *l.*, leaflets elliptic, retuse. *h.* 6ft. to 10ft. Middle and South of Europe (in hedges and bushy places), 1568. This is said to grow on the crater of Vesuvius, where little other vegetation exists. (B. M. 81.)

C. a. crispa (curled).* A synonym of *C. a. pygmæa*.

C. a. pygmæa (dwarf) is a dwarf-growing form, with crisped leaves. SYN. *C. a. crispa*.

C. cruenta (bloody).* *fl.* reddish-yellow, peduncles three to five-flowered. Summer. *l.*, leaflets usually seven to nine, glaucous. *h.* 4ft. to 6ft. South-east Europe and Levant, 1731.

C. haleppica (Aleppo). *fl.* yellow, larger than those of the other species here mentioned. *l.* glaucous, with small more numerous leaflets. *h.* 3ft. to 6ft. Levant, 1752.

C. media (intermediate). *fl.* orange-yellow. *l.* glaucescent. *h.* 6ft. Orient. In general aspect, this resembles *C. cruenta*, but differs in the colour of the flowers.

COLYSIS. *See* **Polypodium.**

COMACLINIUM AURANTIACUM. *See* **Dysodia grandiflora.**

COMAROPSIS (from *Komarum*, the *Comarum*, and *opsis*, resemblance). ORD. *Rosaceæ*. Of the five plants

Comaropsis—*continued.*

mentioned under this generic name in De Candolle's "Prodromus," three belong to *Waldsteinia* and the other two to *Rubus*.

C. fragarioides. *See* **Waldsteinia fragarioides.**

COMAROSTAPHYLIS (from *Komaros*, the *Arbutus*, and *staphyle*, a grape; referring to the clusters of fruit). ORD. *Ericaceæ*. This genus is now included under *Arctostaphylos*. Very pretty greenhouse evergreen shrubs, bearing succulent, edible fruit. They thrive in a compost of loam and peat, and are propagated in three ways: By seeds; by cuttings, under a handlight, in the beginning of autumn; and by grafting on the *Arbutus*, in spring. In southern counties, this genus is tolerably hardy, but should at all times and in all places have a protection in winter, when grown out of doors.

C. arbutoides (Arbutus-like).* *fl.* white; racemes panicled; bracts acuminate, shorter than the pedicels. May. *l.* linear-oblong, entire, mucronate, rusty beneath. Plant erect, tomentose. *h.* 6ft. Guatemala, 1840. (B. R. 29, 30.)

C. polifolia (Polium-leaved). *fl.* crimson, racemose. May. *l.* linear-lanceolate. Plant erect, tomentose. *h.* 2ft. Mexico, 1840.

COMARUM (from *Komaros*, the *Arbutus*; in reference to its fruit being similar to that of the *Arbutus*). Marsh Cinquefoil. ORD. *Rosaceæ*. A hardy herbaceous creeping perennial, only differing from *Potentilla*, under which genus it is generally included, by the spongy character of the mature receptacle and the different colour of the flowers. It thrives in almost any kind of moist soil, and is easily increased by dividing the roots.

C. palustre (marsh). *fl.* dark purplish-brown, pedicellate, axillary, and terminal; petals lanceolate, acuminated, much shorter than the calyx. June. *l.* pinnate; leaflets broad, acutely serrated, green above, but glaucescent beneath. *h.* 1ft. to 1½ft. Northern hemisphere (Britain). The powerfully astringent rootstock yields a yellow dye. SYN. *Potentilla Comarum*. (Sy. En. B. 437.) There is a form with variegated leaves which is very ornamental.

COMBRETACEÆ. A rather extensive genus of trees or shrubs, often climbing, unarmed, very rarely spinose. Flowers in axillary or terminal spikes or racemes. Leaves alternate or opposite, or rarely whorled, entire, exstipulate. This order contains upwards of 240 species, and the genera best known are: *Combretum*, *Quisqualis*, and *Terminalia*.

COMBRETUM (a name given by Pliny to a climbing plant, the name of which is now unknown). ORD. *Combretaceæ*. Stove evergreen climbing or erect shrubs, rarely herbs. Flowers bracteate, almost sessile, rarely pedicellate; spikes solitary or twin, axillary, and terminal, opposite, or three or four in a whorl, usually disposed in a terminal panicle. Leaves entire, opposite or tern, rarely alternate. Many of the Combretums are of very considerable beauty. The most successful method of cultivation is to plant them out in a border in the stove, train them up an upright pillar, and then either up the rafters or on chains hung up in festoons lengthwise of the house. For soil, the most suitable compost is three parts peat, one loam, and one leaf mould. The only attention they require in the warm days of summer, is to give a proper supply of water at the roots, taking care to bestow a sufficient quantity to thoroughly moisten all the soil. In the early part of the season, before flowering, frequent syringings may be applied. When the flowering season is over, they ought to be considerably pruned in and thinned, and, at the same time, the branches and leaves which are to remain, should be thoroughly washed with a sponge. When this is performed, the branches may be pretty closely tied in, and they will require but very little attention until spring. Propagation may be effected by cuttings of young shoots, or, rather, stiffish side shoots, taken off with a heel, planted in sand, under a bell glass, and placed in heat.

C. Afzelii (Afzelius's). A synonym of *C. grandiflorum*.

C. elegans (elegant).* *fl.* yellow; petals lanceolate, acute, hairy; spikes simple, on short peduncles. May. *l.* elliptic, acute, acuminated, puberulous above, and clothed with yellowish tomentum beneath. Brazil, 1820.

Combretum—*continued.*

C. farinosum (mealy). *fl.* orange-coloured, sub-secund; petals scale-formed; spikes usually twin, many-flowered. April to July. *l.* elliptic-oblong, obtuse, rather coriaceous, rounded at the base, mealy beneath. Mexico, 1825.

C. grandiflorum (large-flowered).* *fl.* scarlet, large, secund; petals obovate, obtuse; spikes short, axillary, and terminal. May to July. *l.* oblong. Plant hairy. Sierra Leone, 1824. SYN. *C. Afzelii.* (B. M. 2944.)

C. laxum (loose).* *fl.* red or yellow, large, secund; petals small, elliptic, glabrous; stamens scarlet, nearly 1in. long; spikes axillary and terminal. May. *l.* ovate-lanceolate. Branches subquadrangular. Trinidad, 1818.

C. micropetalum (small-petalled). *fl.* yellow; petals obovate-lanceolate; stamens very long, bright yellow; spikes simple, densely-flowered, on short peduncles, about equal in length to the leaves. August. *l.* elliptic-oblong, acuminated, smoothish above, and lepidoted beneath. Brazil, 1867. (B. M. 5617.)

C. racemosum (racemose).* *fl.* white, on short pedicels; petals lanceolate, obtuse; panicle of many spikes; spikes elongated, tufted at the apex. February to July. *l.* ovate-oblong, acute, shining. West Coast of Africa, 1826.

COMESPERMA (from *kome*, hair, and *sperma*, a seed; in allusion to the tufts of hair at the ends of the seeds). ORD. *Polygaleæ.* A genus of about twenty-five species of greenhouse herbs, under-shrubs or shrubs, erect or twining, all natives of Australia. Flowers small, disposed in compound panicles or simple racemes. Bracts, two or three, at the base of the flowers. They thrive in a mixture of sandy loam and peat, with thorough drainage. Young cuttings will root freely, if planted in sand, under a bell glass. Comespermas, although well worth cultivating, are but rarely seen in English gardens.

C. gracilis (slender). A synonym of *C. volubilis.*

C. volubilis (twining). *fl.* very numerous; wings bright blue, with purple keels; racemes axillary, many-flowered. April. *l.* few, linear-lanceolate, bluntish, slightly wavy at the margins. Stems numerous, very slender. 1834. A very slow-growing and pretty suffruticose twiner. SYN. *C. gracilis.* (P. M. B. 5, 145.)

COMFREY. *See* **Symphytum officinale.**

COMMELINA (named after Kaspar (1667-1731) and Johann (1629-1698) Commelin, Dutch botanists). ORD. *Commelinaceæ.* This genus is allied to the better-known one of *Tradescantia*, but differs in having only three perfect stamens. Herbaceous perennials, some of which are very pretty plants, but not often seen in cultivation. The stove and greenhouse evergreen species are best grown in a light and rich soil, and are propagated chiefly by cuttings, which will root in sand, in a gentle hotbed. The tuberous-rooted species, when grown in the open, should be taken up before autumn, and stored away, like Dahlias, care being taken, however, to prevent them becoming very dry. If the position is sheltered, and the soil well drained, they may be left out. In the ensuing spring, their growth may be accelerated by the aid of slight heat, and in May, they may be transplanted out in the open. Plants thus treated, flower much stronger than seedlings.

C. africana (African). *fl.* of a tawny yellow colour, at first glance resembling those of some of the *Papilionaceæ.* May to October. *l.* lanceolate, creeping, rooting at the nodes. Stems slender, terete. *h.* 1ft. to 3ft. Cape of Good Hope, 1759. A trailing, somewhat bushy greenhouse plant. SYN. *C. lutea.* (B. M. 1431.)

C. benghalensis (Bengal). *fl.* blue, small. June. *l.* oval, green. Bengal, 1794. Stove evergreen trailer. SYN. *C. prostrata.* (R. G. 1868, 592.)

C. cœlestis (sky-blue).* *fl.* blue; peduncles pubescent; spathes cordate acuminate, folded together. June. *l.* oblong-lanceolate; sheath ciliated. *h.* 1½ft. 1813. Half-hardy herbaceous perennial. See Fig. 504. (S. B. F. G. 3.)

C. c. alba (white)* resembles the type, except in the colour of the flowers

C. deficiens variegata (deficient variegated). *fl.* blue, small, produced at the ends of the branches. *l.* ovate-lanceolate, freely and elegantly striped with longitudinal bands of white. Stems terete, branching. Brazil. A low-growing, diffuse, stove perennial. (The type is figured in B. M. 2644.)

C. elliptica (elliptic).* *fl.*, calyx white, glabrous; peduncles 2in. long, straight, with a line of reflexed hairs along the inner side. July. *l.* lanceolate, acuminate, flat, glabrous on both sides, shining bright green above, whitish below, seven-nerved, the middle rib prominent behind, channelled above. Stem ascending, rooting, branched, red, especially above the joints, hairy. *h.* 1½ft. to 2ft. Lima. A very pretty greenhouse species. (B. M. 3047, under the name of *C. gracilis.*)

Commelina—*continued.*

FIG. 504. COMMELINA CŒLESTIS, showing Habit, and detached Flower (natural size).

C. erecta (erect). *fl.*, spathes crowded and nearly sessile, hooded, top-shaped in fruit. Summer. *l.* large, 3in. to 7in. long, 1in. to 2in. wide, oblong-lanceolate, the upper surface and margins rough backwards. Stems erect, rather stout. *h.* 2ft. to 4ft. Pennsylvania. One of the largest species. Hardy. There is a hairy form, *C. hirtella.*

C. lutea (yellow). A synonym of *C. africana.*

C. prostrata (prostrate). A synonym of *C. benghalensis.*

C. scabra (rough). *fl.* purplish-brown, terminal, eight or ten together, each blossom 1in. across. July. *h.* 1ft. Mexico, 1852.

C. virginica (Virginian).* *fl.* blue; spathes mostly solitary or scattered, peduncled, conduplicate, round-heart-shaped when expanded, pointed, in fruit somewhat hood-like. Summer. *l.* oblong or linear-lanceolate. Stems slender, erect, or reclined and rooting towards the base. South United States. Hardy. There is a narrow-leaved form of this species, named *C. angustifolia.*

COMMELINACEÆ. An extensive, widely dispersed order of herbaceous plants, principally confined to the warmer regions. Flowers with the outer perianth of three segments, and the inner also of three, and coloured. Leaves flat, usually sheathing at the base. There are above 300 species. The two best-known genera are *Commelina* and *Tradescantia.*

COMOCLADIA (from *kome*, hair, and *klados*, a branch; in allusion to the leaves being crowded at the tops of the branches). Maiden Plum. ORD. *Anacardiaceæ.* Stove evergreen trees, abounding in clammy juice. Flowers purple, small, on short pedicels, disposed in loose branched panicles; petals three to four, imbricate. Leaves impari-pinnate, with opposite leaflets. They succeed well in a mixture of peat or loam, or any light rich soil. Ripened cuttings root in sand, if placed under a glass, in heat.

C. dentata (toothed). *l.*, leaflets on short footstalks, oblong, erosely-toothed, smooth above and downy beneath. *h.* 30ft. Cuba, 1790.

C. ilicifolia (Holly-leaved). *l.*, leaflets ovate or roundish, sessile, smooth, with spiny angles; spines one to three on each side. *h.* 20ft. 1778.

C. integrifolia (entire-leaved). *l.* about 2ft. long; leaflets stalked, lanceolate, quite entire, smooth. *h.* 10ft. to 30ft. Jamaica, 1778.

COMPARETTIA (named after Andreas Comparetti, professor at Padua, and a writer on vegetable physiology; born in 1746, died in 1801). ORD. *Orchideæ.* Elegant but very rare stove epiphytal orchids, with handsome, generally drooping, racemes of small but brightly-coloured flowers, which retain their beauty for a considerable period. They succeed well on small blocks of wood, with live sphagnum, suspended from the roof of a moderately warm

Comparettia—*continued.*

house, where they will not be fully exposed to the sun. Comparettias require a liberal supply of moisture during the growing season, and at no time should they be allowed to become dry. Propagated by division of the plants.

C. coccinea (scarlet).* *fl.*, sepals and petals brilliant scarlet; lip the same colour, with a tinge of white at the base; racemes three to seven-flowered. November. *l.* bright green on the upper surface, elegant purple beneath. Brazil, 1838. (B. R. 24, 68.)

C. falcata (sickle-shaped).* *fl.*, sepals and petals rich rosy-purple; lip the same colour, but thickly veined with a deeper shade. Columbia, 1836. Not very dissimilar to *C. coccinea*, but having broader leaves and somewhat differently shaped flowers. Very rare.

C. macroplectron (long-spurred).* *fl.* pale rose-coloured, speckled with red, distichous, nearly 2in. long from the tip of the dorsal sepal to the end of the lip; racemes pendulous. *l.* two to three, 4in. to 5in. long by ½in. to 1½in. broad, leathery, green above; pale, and faintly streaked with rusty-yellow, beneath. New Grenada. (B. M. 6679.)

C. rosea (rosy).* Very small, but pretty, with shorter and more compact racemes than *C. falcata*. Spanish Main, 1843. Rarely seen. (P. M. B. 10, 1.)

COMPLICATE, COMPLICATED. Folded up upon itself.

COMPOSITÆ, or **ASTERACEÆ.** The most extensive order of herbs and shrubs, or trees, in the vegetable kingdom. There are between 700 and 800 genera, and about 10,000 species. Flowers collected into a head on a common receptacle, and surrounded by an involucre. Leaves alternate or opposite, exstipulate. Among the more important genera are: *Aster, Chrysanthemum,* and *Dahlia.*

COMPOSTS. A term applied to any mixture of different soils or manures, either for potting purposes, or for top-dressing plants in pots or in the open ground. It may consist of different ingredients, with or without the addition of any manure, according to the habit or requirement of the subject for which it is intended. Manures that would prove destructive by their strength to any plant in a pot, may be mixed to form a certain proportion of the Compost, and thereby prove beneficial. Loam, in most cases, forms the greater bulk of soils used for fruit-trees, and for most strong-growing plants of the soft-wooded class. This is not often suitable for use wholly by itself, consequently the addition of other material has to be made, to render it lighter, and so encourage root action, or to keep it sufficiently porous to allow the free passage of air and water. Charcoal, sharp sand, leaf soil, burnt earth, peat, and many other things, besides so-called manures, may be used for this purpose; and, although it may be necessary to add something stronger for sustaining any given plant, yet one or more of these may be generally used beneficially. A Compost of any description should be thoroughly mixed before being used, in order that the different parts may be evenly incorporated. It should be in a condition not too dry nor sufficiently wet to cling together. This is very important, as the after condition of the plants will, in many cases, testify. All manures should be used when somewhat dry, and none applied when in a fresh state, as then they often prove destructive. Good leaf soil is one of the most useful ingredients for Composts, and that which has never been placed in sufficient bulk to cause violent heating, is the best. If obtained from woods where decay has taken place very gradually, it is much to be preferred. It should then be collected ready for use as required, and it will not, as a rule, generate sufficient heat afterwards to cause injury. Hard-wooded greenhouse plants succeed in peat and sand, and manure should never be applied to them. It must be remembered, in preparing a Compost for such subjects, that it will probably have to last for a period of at least twelve months. The following questions should be considered when preparing a mixture of soil. What is the description of plant for which it is intended? Is it a hard or soft-wooded subject? and Is it to be potted

Composts—*continued.*

temporarily or permanently? Young plants are, in all cases, benefited by having a lighter soil than others better established, as root action is thereby encouraged. These principles should always be considered, and all subjects treated accordingly. Suitable Composts for most plants are given under their respective headings; consequently, it is only necessary here to give instructions for general guidance. Study and personal experience with the various requirements of the plants to be potted, must be exercised in the application of suitable ingredients in the Compost. *See also* **Manures.**

COMPOST YARD. An inclosure in gardens, generally in the neighbourhood of the potting sheds, where different soils, manures, &c., are stored until required for use. A great advantage is gained if the Compost Yard contains an open shed, in which the whole or a part of the soils used for potting, can be placed, and kept dry, or be prepared in wet weather for use. A rule should always be enforced of having that portion of any soil or manure left properly placed together and tidy each time any is taken away.

COMPOUND. When formed of several parts united in one common whole. A Compound Leaf is shown at Fig. 505.

FIG. 505. COMPOUND LEAF.

COMPOUND CORYMB. A branched Corymb, the divisions of which are corymbose.

COMPRESSED. Pressed together and flattened.

COMPSANTHUS. A synonym of **Tricyrtis** (which *see*).

COMPSOA. A synonym of **Tricyrtis** (which *see*).

COMPTONIA (named after Henry Compton, once Bishop of London, the introducer and cultivator of many curious exotic plants, and a great patron of botany). ORD. *Myricaceæ.* An ornamental hardy deciduous shrub, requiring peat earth and a shady situation. Propagated by layers, which should be put down in autumn.

C. asplenifolia (Spleenwort-leaved).* *fl.* whitish; male catkins lateral, cylindrical; female catkins lateral, ovate. March and April. *l.* simple, alternate, lanceolate, pinnatifidly toothed, downy, sprinkled with yellowish, resinous, transparent particles. Stipules half heart-shaped. *h.* 3ft. to 4ft. North America, 1714. A distinct shrub, with fragrant fern-like leaves. (W. D. B. 166.)

CONANDRON (from *konos*, a cone, and *aner, andron*, a male, an anther; the appendages to the anthers are united in a cone around the style). ORD. *Gesneraceæ.* A rare and very pretty, but not quite hardy, herbaceous perennial. For cultivation, *see* **Ramondia,** to which this genus is allied.

C. ramondioides (Ramondia-like).* *fl.* shortly pedicellate, with linear bracts, borne on leafless scapes in a forked corymbose cyme, which is at first drooping; *corolla* white, or pink with a purplish eye, rotate, twice the length of the calyx; tube sub-globose, whitish; calyx about ¼in. long, pubescent. Summer. *l.* few, sometimes solitary, stalked, ovate-oblong, acute, coarsely serrated, dark green and rugose. *h.* 6in. Japan, 1879. (B. M. 6484.)

CONANTHERA (from *konos*, a cone, and *anthera*, an anther; in reference to the six anthers forming a cone in the early stage of the flower). ORD. *Liliaceæ.* Very pretty little half-hardy bulbous plants, rather difficult to preserve, and hence rarely seen in English gardens. They should be planted in sandy soil, in a warm border, and be well protected throughout the winter from excessive rains and frosts; or lifted and stored in sand, in frost-proof quarters. Propagated by offsets, or by seed.

C. bifolia (two-leaved). *fl.* blue, in small panicles. April. *l.* linear, acute. *h.* 6in. to 1½ft. Chili, 1823.

C. campanulata (bell-shaped). *fl.* blue, paniculate. April. *l.* linear, shorter than the peduncle. *h.* 1ft. Chili, 1823. SYN. *Cumingia campanulata.* (B. M. 2496, under the name of *Conanthera bifolia.*)

CONCAVE. Hollow.

CONCENTRIC. Having a common centre.

CONCRETE. A cement composed of pebbles, lime and sand. It is largely employed for walks and for the foundations of buildings. *See also* **Walks.**

CONCRETE. Formed into one mass, or joined together.

CONDOR VINE. *See* **Gonolobus Cundurango.**

CONDUPLICATE. In vernation, folded face to face.

CONE. The strobilus or scaly fruit of a Pine or Fir tree.

CONE FLOWER. *See* **Rudbeckia.**

CONE HEAD. *See* **Strobilanthes.**

CONFLUENT. Gradually united.

CONIFERÆ. A large order of trees or shrubs, mostly evergreen, and with resinous secretions. Flowers monœcious or dicœcious, naked, disposed either in cylindrical or short catkins, with closely-packed scales. The females are sometimes solitary. Ovules and seeds naked. Leaves alternate, opposite, or fascicled in a membranous sheath, often narrow, needle-like, or rigid, or reduced to dense imbricating scales, rarely with a flattened limb. Bentham and Hooker divide this large family into six tribes, viz.: ABIETINEÆ, containing *Abies*, *Cedrus*, *Larix*, *Picea*, *Pinus*, *Pseudotsuga*, and *Tsuga*; ARAUCARIÆ, containing *Agathis*, *Araucaria*, and *Cunninghamia*; CUPRESSINEÆ, containing *Actinostrobus*, *Callitris*, *Cupressus*, *Fitzroya*, *Juniperus*, *Libocedrus*, and *Thuja*; PODOCARPEÆ, containing *Microcachrys*, *Podocarpus*, and *Saxegothea*; TAXEÆ, containing *Dacrydium*, *Ginkgo*, *Pherosphæra*, *Phyllocladus*, *Taxus*, and *Torreya*; TAXODIEÆ, containing *Athrotaxus*, *Cephalotaxus* *Cryptomeria*, *Sequoia*, and *Taxodium*.

CONIUM (from *konao*, to whirl around; in reference to the giddiness caused by eating the leaves). Hemlock. ORD. *Umbelliferæ*. Biennial poisonous herbs. Involucre of three to five leaves; involucels dimidiate. Leaves decompound. Stem terete, branched. Root fusiform. Not more than two or three species are known, of which one (*C. chærophylloides*) is South African and Abyssinian. The Common Hemlock (*C. maculatum*) is widely spread over Europe, North Asia, and Siberia. It has long been used in medicine.

CONJUGATE. When a leafstalk bears but a single pair of leaflets.

CONNARACEÆ. An order of trees or shrubs, closely allied to *Leguminosæ*, but having perfectly regular flowers. Flowers small, in axillary or terminal racemes or panicles. Leaves alternate, usually pinnate, stipulate. The best-known genus is *Connarus*.

CONNARUS (from *Konnaros*, the name of an unknown tree, described at length by Athenæus). SYN. *Omphalobium*. ORD. *Connaraceæ*. A large genus of ornamental stove evergreen shrubs. Most of them are natives of tropical Asia and America. Flowers white, disposed in racemose panicles. Leaves alternate, leathery, impari-pinnate. A mixture of loam and peat will answer well for these plants. Cuttings of firm shoots, taken in April, will root, if planted in sand and placed in bottom heat, under a bell glass.

C. pubescens (downy). *fl.* white, sweet-scented, disposed in axillary and terminal panicles. *l.*, leaflets five, oval, acute, smooth above, covered beneath with rather white pubescence. *h.* 5ft. French Guiana, 1822. SYN. *Robergia frutescens*.

Other species known to cultivation are: *nitidus* and *paniculatus*.

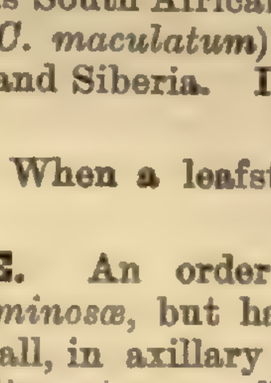

FIG. 506. CONNATE LEAF.

CONNATE. Where the bases of opposite leaves are joined together. See Fig. 506.

CONNIVENT. Converging; having a gradually inward direction.

CONOCARPUS (from *konos*, a cone, and *karpos*, a fruit; in reference to the scale-formed fruit being so closely imbricated in a head as to resemble a small Fir-cone). Button-tree. ORD. *Combretaceæ*. The only species is a stove evergreen shrub. Heads of flowers pedunculate; flowers crowded; petals absent. Leaves alternate, quite entire. This plant thrives in a mixture of loam and peat. Cuttings of firm shoots, taken in April, will root in sand, if placed under a bell glass, in bottom heat.

C. erectus (upright).* *fl.* white, in panicled heads. *l.* oblong-lanceolate, tapering to both ends, thickish, glabrous, or, when young, rather downy, biglandular at the base. *h.* 6ft. to 8ft. Tropical America, 1752.

CONOSPERMUM (from *konos*, a cone, and *sperma*, a seed; the fruit or carpels growing close together, and forming a cone). ORD. *Proteaceæ*. Greenhouse evergreen shrubs, from extra-tropical (mostly Western) Australia, principally white-flowered. This genus does not appear to be much known in horticultural circles. Of more than thirty species known to science, eight or nine are reputed to have been introduced.

CONOSTEGIA (from *konos*, a cone, and *stege*, a covering; in reference to the conical calyptriform calyx falling off in one piece). ORD. *Melastomaceæ*. Stove evergreen trees or small shrubs. Flowers in terminal panicles. Leaves petiolate, entire or denticulate, three to five-nerved. For culture, *see* **Melastoma.**

C. Balbisiana (Balbis's). This species is a twining shrub, of which the leaves are oval and blunt, with a point.

C. procera (tall). *fl.* rosy or white, large, on simply-divided panicles. June. *l.* elliptical-oblong, sub-triplinerved. *h.* 25ft. Jamaica, 1825.

CONOSTEPHIUM (from *konos*, a cone, and *stephos*, a crown; referring to the disposition of the flowers). ORD. *Epacrideæ*. An ornamental greenhouse evergreen shrub. Flowers solitary, recurved, axillary. Fruit a hard indehiscent drupe, one-celled by abortion of the other four cells. Leaves scattered. It thrives in a compost of peat and sandy loam. Cuttings of young shoots, taken in April, will root in sand.

C. pendulum (hanging down). *fl.* red. April. *h.* 6in. to 18in. West Australia.

CONRADIA. *See* **Pentarhaphia.**

CONSERVATORY. This structure is distinguished from a greenhouse by having central beds, in which permanent plants are placed, in addition to those arranged to form a continued floral display on the side shelves. The term is also applied to small glass structures where a few creepers are planted for covering the roof or back wall, and the remaining space occupied by decorative foliage or flowering plants. The greatest enjoyment is obtained from a Conservatory either joined to the mansion or connected with it by means of a suitable corridor. An opportunity is then afforded of visiting and admiring the flowers in any weather or at any season. This arrangement is not always practicable with large glass houses, on account of the position of the mansion, or its style of architecture; consequently, the plan of having an isolated building has to be adopted. The latter is, as a rule, better suited to good cultivation, and gives greater facilities to the gardener for renewing and arranging the movable plants. In the other case, only a very limited time can be allowed each morning for such work. Conservatories found in gardens of an early period, have, in many cases, been built to correspond, and produce with the mansion an architectural effect. This much they may do, but they are wholly unsuited to good plant culture. If the external architecture of a Conservatory has to coincide with that of another building, the important and primary point of making suitable provision for the well-being of the plants

Conservatory—*continued.*

internally, should also be in some way combined. Those of modern construction are invariably better in this respect than many of an earlier date. Only sufficient space is here available to give a few general remarks, that may be modified to suit individual requirements. The selection of position has at times no alternative, but if there is an opportunity, an open one with a south or south-west aspect should be chosen, so as to obtain all possible sunshine in winter. Shelter afforded by trees from north and east winds is also a great advantage at that season, but they should be sufficiently far away as not to overhang the house. Provision for admitting abundance of light and air, both at top and bottom, is of great importance. The ventilators at the apex only are best for winter use, but all may be utilised in summer, as cool-house flowering plants are soon injured in a close atmosphere or a high temperature. A thin shading is necessary in bright weather, but is best if placed on rollers, to admit of removal at other times. The heating apparatus should be capable of maintaining a temperature of 50deg. in winter, although it is not always advisable to keep so high as this. The pipes are best concealed as much as possible under the side stages, or a part may be under the floor, covered with perforated iron gratings, through which the heat will pass readily. In the formation of the ground plan, sufficient width should always be allowed for the paths. These may be made of gravel, and covered with white spar or shell, or a lasting floor may be formed of ornamental tiles that are specially made for the purpose. A kerbing of terra-cotta or stone should separate the paths from the beds of soil. Sufficient space cannot be obtained for placing many plants out of pots in small glass houses that adjoin or form part of a mansion. In large structures, of proportionate hight, a much greater diversity of plants, both in size and habit, may be introduced permanently. Beds for these must have ample drainage and a depth of nearly 3ft. of good soil, formed principally of loam and peat, with plenty of charcoal intermixed, to keep it open and allow water to pass freely. A cool fernery for the smaller growing varieties, placed in connection with, or forming part of, a Conservatory, is always a great source of attraction, especially if some rockwork is constructed on which to plant the ferns. This part should be on the northern side, or in the coolest position obtainable. Many such places are among the best for cultivating cool orchids, as the requisite moisture given the ferns is just what is required by the former when placed on inverted pots or suspended from the roof. Hanging baskets, if well filled and attended to, by watering frequently in summer, are always good additions to Conservatory decoration. Where there is sufficient space, large cool or temperate tree ferns, with others of a dwarfer type, also cycads and palms, may be introduced, with Araucarias, Aralias, Camellias, Dracænas of the green-leaved type, greenhouse Rhododendrons, and many other plants of a similar habit, to form permanent features. Care must be taken, and forethought exercised, regarding their arrangement and the position to be occupied by each when fully developed. Climbers and pillar plants must not be omitted in any Conservatory, as many of these show to much greater advantage when grown in this way, although they may be amenable to other systems of culture. A few indispensable ones may be given: *Begonia fuchsioides*, *Bougainvillea glabra*, Cestrums, Fuchsias, Lapagerias, cool-house species of *Passiflora*, *Plumbago capensis*, climbing Tea or Noisette Roses, *Tacsonia exoniensis* and *T. Van Volxemii*, &c. Temporary plants, suitable for the embellishment of the stages and Conservatory generally, are endless in variety, and will be found recommended for the purpose under their respective headings. A band of *Selaginella Kraussiana*, about 9in. wide, planted on the margin of the beds, and, if practicable, on the side shelves also, tends greatly to increase

Conservatory—*continued.*

the general effect produced by the plants. All Conservatories, and everything connected therewith, should at all times be kept as clean and tidy as possible.

CONSTRICTED. Tightened or contracted in some particular place.

CONTIGUOUS. So close as to touch one another.

CONVALLARIA (from *convallis*, a valley, and *rica*, a mantle; in reference to the dense covering formed by the leaves, and to its natural habitat). Lily of the Valley. ORD. *Liliaceæ*. A monotypic genus, consisting of the universally admired Lily of the Valley. It is a widely-distributed, hardy, herbaceous perennial, being found throughout Europe (Britain), North Asia, and also in the United States. For the various methods of culture, and enumeration of varieties, *see* **Lily of the Valley.**

FIG. 507. CONVALLARIA MAJALIS, showing Habit and detached Raceme.

C. majalis (May). *fl.* pure white, bell-shaped; raceme gracefully arching. Spring. *l.* twin, radical, on long stalks, elliptic oblong, marked with a delicate tracery of nerves and veins. *h.* 6in. to 1ft. See Fig. 507.

CONVOLUTE. Rolled together, or over each other. A form of vernation.

CONVOLVULACEÆ. An extensive order of herbs or shrubs, usually twining, and with a milky juice. Flowers regular, solitary or crowded on the peduncles; corolla plaited. Leaves alternate, exstipulate. This order is said to contain nearly 700 species; it includes such well-known genera as *Batatas*, *Calystegia*, *Convolvulus*, *Ipomœa*, and *Pharbitis*.

CONVOLVULUS (from *convolvo*, to entwine; referring to the twining habit of most of the species). Bindweed. ORD. *Convolvulaceæ*. A genus comprising about 150 species of annual or perennial, prostrate, twining or erect herbs or sub-shrubs, distributed throughout all temperate and subtropical parts of the world; the Mediterranean region, however, is the head-quarters of the genus. Corolla funnel-shaped or campanulate. Leaves alternate, entire, dentate, or lobed, lanceolate, often cordate or sagittate. They are, for the most part, very handsome plants, when in full blossom. All are of very simple culture. The tender species do best in a compost of peat, leaf soil, and loam, and are usually propagated by cuttings—sometimes by seeds—in spring. The hardy annuals should be sown in spring, in the open border. The hardy perennials may be increased by young cuttings; by division of the roots; or by seeds, sown in spring.

C. althæoides (Althæa-like).* *fl.*, corolla pale red or lilac, large, spreading, entire; peduncles usually one-flowered; sepals ovate, acute. June. *l.* shining, silvery; lower ones cordate, deeply crenated; superior ones pedatifid; middle one long, pinnatifid. South Europe, 1597. Hardy deciduous perennial. (S. F. G. 194.)

C. arvensis (field). Small Bindweed. *fl.* white or pink, 1in. in diameter; peduncles axillary, usually two-flowered, with two small bracts at their fork, and a third on one of the pedicels, at some distance from the flower; sepals small, broad. June to September. *l.* 1in. to 3in. long, very variable, apiculate; lobes acute. Stems numerous, trailing or twining, slender. Europe, and Central and Russian Asia, except the extreme north; common, and often a troublesome weed, in England and Ireland, and local in Scotland. A charming little plant for hanging baskets. See Fig. 508.

DAPHNE MEZEREUM.

1. WHITE VARIETY & FRUIT. 2. COMMON VARIETY. 3. DOUBLE VAR

FIG. 508. CONVOLVULUS ARVENSIS.

Convolvulus—*continued.*

C. bonariensis (Buenos Ayres). *fl.*, corolla white, variegated with red veins, small; peduncles generally three-flowered, shorter than the leaves. July. *l.* hastate, cuneated at the base, each terminating in a bristle, petiolate; middle lobe linear, 2in. long, obtuse, two lines broad; lateral ones very short. Chili, 1817. Hardy deciduous.

C. bryoniæfolius (Bryony-leaved). A synonym of *C. italicus.*

C. canariensis (Canary Islands). *fl.*, corolla purplish-violet, hairy outside, at length almost flat; peduncles many-flowered, longer than the petioles; calyx villous. June to September. *l.* cordate, oblong, acute, downy. Stem terete, villous. Canary Islands, 1690. Half-hardy evergreen. (B. M. 1228.)

C. cantabricus (Cantabrian).* *fl.*, corolla pale red; peduncles usually two to three-flowered; sepals narrow, very villous. August. *l.* oblong-lanceolate, acute. Plant beset with spreading hairs. Stem branched, prostrate. *h.* 6in. to 1ft. South Europe, 1680. Hardy deciduous.

C. chinensis (Chinese).* *fl.* at the upper part of the stem, axillary, solitary, pointing one way; corolla rotately funnel-shaped; peduncles spreading; calyx greenish, much shorter than the corolla; limb large, purplish-crimson, marked in the disk with an unequally-pointed pale yellow star, surrounded by a purple halo. *l.* firm, sub-coriaceous, greyish-green, hastate; middle lobe elongated, oblong, somewhat tapered, blunt, with a small point; side ones divaricate, short, quite entire; petioles linear, channelled. *h.* 2ft. to 3ft. Root creeping. China. Hardy perennial. The flower expands during the night, or early in the morning, and fades in the forenoon. (B. R. 322.)

C. Cneorum (Cneorum).* *fl.* capitate, on short peduncles; corolla light pink, hairy outside; some of the bracts as large as the leaves, hairy. May. *l.* lanceolate, clothed with silvery-silky tomentum. Stem shrubby, branched. *h.* 1ft. to 3ft. South Europe, 1640. Half-hardy shrub. (B. M. 459.)

C. elongatus (trailing). *fl.* white, small; corolla sub-rotate, rather deeply five-lobed; peduncles axillary, solitary, filiform, tomentosely villous, one to two-flowered; calyx funnel-shaped, green; lobes rounded, slightly furred on the outside. July, August. *l.* alternate, wide asunder, cordate, taper-pointed, thin, lively green, about 1½in. in length and 1in. across, beset with white atomous dots, and bare on the upper side, slightly furred on the under; petioles round, many times shorter than the leaf. Canary Islands, 1815. Hardy annual. (B. R. 498.)

C. erubescens (erubescent).* *fl.* reddish-pink, small; peduncles one to three-flowered, shorter than the leaves; sepals equal, ovate, mucronulate, spreading. July to September. *l.* hastate; hind lobes toothed or cut; intermediate one lanceolate or linear, toothed or quite entire. Plant rather pilose. Australia, 1803. Greenhouse biennial. (B. M. 1067.)

C. Herrmanniæ (Herrmann's). *fl.*, corolla white, small; limb crenulated, acute; sepals ovate, acuminated, downy, nearly equal; peduncles two-flowered, longer than the petioles. August. *l.* oblong-lanceolate, cordately sagittate at the base, obtuse, mucronate, crenately repand. Plant tomentose, white. *h.* 5ft. Peru, 1799. Greenhouse evergreen.

C. italicus (Italian). *fl.*, corolla reddish-purple, large; peduncles long, one-flowered, articulated; sepals ovate, acute. July. *l.*, lower ones cordate, obtuse, crenated or toothed; upper ones somewhat palmately seven-lobed; middle ones long, toothed, or lobed. Plant rather hispid, green. China, 1802. Half-hardy evergreen. SYN. *C. bryoniæfolius.* (B. R. 1847, xii.)

C. lanuginosus (woolly). *fl.*, corolla yellowish, with a lanceolate purple ray on the outside of each lobe, clothed with yellowish hairs; peduncles three-flowered, pilose; the three outer sepals very hairy, ovate, acuminated. July. *l.* shortly petiolate, cordate-oblong, somewhat hastate, clothed with very soft, rusty, silky tomentum. Levant, 1816. Hardy deciduous.

C. lineatus (lined).* *fl.*, corolla pale reddish-purple, hairy outside; sepals rather foliaceous, silky; peduncles one to two-flowered, shorter than the leaves. June. *l.* lanceolate, petiolate, acute, silky, villous, lined. Floriferous stems erect, simple, corymbose at top. *h.* 6in. South Europe, 1770. Hardy deciduous.

C. major. The very common annual known by this name is **Ipomœa purpurea** (which *see*).

C. mauritanicus (Mauritanian).* *fl.* blue, with a white throat and yellow anthers, small, about 1in. across; calyx villous, with five linear divisions, two of which are rather smaller than the others; peduncles one, two, or three-flowered. Summer. *l.* nearly ovate, alternate, in two rows, on very short petioles. North Africa. Plant covered with minute soft white hairs. Greenhouse (or quite hardy in many places) prostrate twining perennial, very useful for baskets. (F. d. S. 2185.)

C. ocellatus (eyed).* *fl.*, corolla white, with a deep red-purple eye; scarcely 1in. in diameter, with a short tube, a little longer than the calyx, which gradually expands into a spreading five-angled limb; peduncles rising from the axils of the

Convolvulus—*continued.*

leaves; calyx of five ovate, acuminated sepals, of which the three outer are more or less silky on the back; stamens five, within the tubular part of the corolla. August. *l.* sessile, linear, rather acute, entire, one-nerved, clothed on both sides, but especially beneath, with appressed, silky, white hairs. South Africa. A very neat, Evolvulus-like species. (B. M. 4065.)

C. pannifolius (cloth-leaved).* *fl.*, corolla of a pale violet-purple, white in the disk and tube, marked with five deeper stellate folds, which are roughly pubescent on their under side; peduncles solitary, axillary, longer than the leaf, filiform, and rather hard, divided upwards into cymes of three to twenty flowers; calyx several times shorter than the corolla, pubescent; tube shorter than the calyx. *l.* oblong-cordate, reticulately veined and wrinkled underneath, with many pale varicose nerves; petioles shaggy. The native habitat of this species is doubtful, but, in all probability, it is from the Canary Islands. A twining greenhouse shrub, well adapted for conservatory decoration. (B. R. 222.)

C. pentapetaloides (five-petalled-like). *fl.*, corolla bluish, small, with a yellow throat, and a semi five-cleft limb; peduncles short, one-flowered. June. *l.*, lower ones petiolate, spathulate-lanceolate, obtuse, nearly naked, lined, ciliated; upper ones linear-cuneiform, sessile. Plant prostrate, creeping, filiform. Stem rather hairy at top. *h.* 6in. South Europe, 1789. Hardy annual. (S. F. G. 197.)

C. persicus (Persian). *fl.*, corolla white; sepals ovate, inner ones smaller; peduncles one-flowered, length of leaves. June. *l.* oval, obtuse, on very short petioles. *h.* 1ft. Persia, 1829. Hardy deciduous.

C. Scammonia (Scammony).* *fl.*, corolla cream-coloured, or very pale red, large, campanulate; sepals loose, glabrous, ovate, repand, obtuse, point reflexed; peduncles generally three-flowered, longer than the leaves. July. *l.* cordate-sagittate, truncate behind. Stem angular. Levant, 1726. Plant glabrous. Hardy deciduous. A gum-resin is obtained from the roots of this species which is largely used in medicine as a purgative.

C. scoparius (broom-like). *fl.*, corolla white, hairy outside; peduncles generally three-flowered; calyx silky; sepals ovate, acute. August and September. *l.* linear and rather pilose. Stem terete, glabrous. Teneriffe, 1733. Shrub. The wood of this species is hard and white, with radiating stripes. (B. R. 1841, 43.)

C. suffruticosus (shrubby). *fl.*, inflorescence on three-flowered peduncles, sometimes sub-divided, and with more flowers, shorter than the leaf; corolla white, with a yellow disk and five purple lines answering to the same number of broader villous ones on the outside, flatly expanded down to the short tube within the calyx; calyx three times shorter than the flower, spreading above the middle, where the leaflets are broad and ciliate. June and July. *l.* deep green, elongatedly cordate, tapered to a point, slightly pubescent on both sides, on the upper appressedly so; petioles scarcely one-third as long. *h.* 3ft. or 4ft. Madeira, 1788. A slender twining shrub. (B. R. 133, plate numbered 132.)

FIG. 509. FLOWERING STEM OF CONVOLVULUS TRICOLOR.

C. tricolor (three-coloured).* The Dwarf Convolvulus of gardens. *fl.*, corolla rather large, with a yellowish throat, a blue limb, the rest white; sepals ovate-lanceolate, acute; peduncles one-flowered, bibracteate, longer than the leaves. July to September. *l.* ovate-lanceolate, or spathulate, hairy, ciliated. Stem declinate, terete, beset with small, soft, white hairs. *h.* 1ft. Sicily, Spain, and Portugal, 1629. See Fig. 509. (B. M. 27.) Of this very popular hardy annual there are several varieties, differing principally in the colour of the flowers.

CONYZA (from *konis*, dust; because it was supposed to have the power, when powdered and sprinkled, of driving away flies). Fleabane. ORD. *Compositæ*. A rather extensive genus of stove, greenhouse, and hardy herbaceous plants, rarely shrubby. The involucre is campanulate, with from two to several series of linear or linear-lanceolate bracts; receptacle flat or convex, naked or foveolate; disk-florets yellow, those of the ray paler in colour. Leaves alternate, entire, toothed (rarely cut). There are about fifty species, most of which are confined to tropical and sub-tropical regions of both hemispheres. They are mainly of botanical interest only, and do not call for further mention in this work.

COOKIA (named after Captain James Cook, R.N., the celebrated circumnavigator, who was killed in the Sandwich Islands in 1779). Wampee-tree. ORD. *Rutaceæ*. Small greenhouse trees. Leaves impari-pinnate; leaflets alternate, unequal at the base, or oblique. They thrive well in a mixture of loam and sandy peat. Ripened cuttings, not deprived of any of their leaves, will root in sandy soil, if plunged under a hand glass, in a moist heat. This genus is now merged into *Clausena*, and the proper name of the species below mentioned is *Clausena Wampi*.

C. punctata (spotted). *fl.* white, small, disposed in racemose panicles. *fr.* edible, about the size of a pigeon's egg, yellow on the outside; pulp white, rather acrid, but sweet. June and July. *l.*, leaflets ovate-lanceolate, acuminated, hardly unequal at the base. *h.* 20ft. Probably a native of China, 1795. A middle-sized tree, now cultivated (and partly naturalised) in many tropical countries.

COOPERIA (named after Mr. Joseph Cooper, a very successful cultivator, and at one time gardener at Wentworth House, in Yorkshire, the residence of Earl Fitzwilliam). ORD. *Amaryllideæ*. Closely allied to *Zephyranthes*. There are two species of this genus in cultivation, with solitary Primrose-scented flowers, which are remarkable in the order, on account of their expanding during the night. They are hardy only in sheltered situations. For culture, propagation, &c., *see* **Zephyranthes**.

C. Drummondi (Drummond's). *fl.* white, the tube changing to red; tube 4in. to 5in. long; limb 1½in. to 2in. across, with ovate segments. August. *l.* linear, twisted, 10in. to 15in. long. *h.* 6in. to 9in. Texas. (B. R. 1835.)

C. pedunculata (peduncled). *fl.* white, the peduncle more developed, and the tube shorter, than in *C. Drummondi*. August. *l.* linear-oblong, obtuse, glaucescent. Texas. (B. M. 3727.)

COPAIBA BALSAM. *See* **Copaifera officinalis.**

COPAIFERA (from *Copaiba*, the Brazilian name for the balsam of Capevi, and *fero*, to bear; trees producing the balsam of Capevi). ORD. *Leguminosæ*. Stove evergreen trees. Flowers generally white, disposed in panicles. Leaves impari-pinnate; leaflets coriaceous. They thrive in a sandy loam. Cuttings of firm shoots will root in sand, in March, if placed in heat, under a glass. There are about a dozen species (two of which are tropical African, and the rest tropical American), the best-known and most important being *C. officinalis*.

C. Jacquini (Jacquin's). A synonym of *C. officinalis*.

C. officinalis (officinal). Balsam of Copaiba. *l.* with two to five pairs of ovate, incurved, unequal-sided, bluntly acuminated leaflets, full of pellucid dots. *h.* 20ft. West Indies and tropical America, 1774. SYN. *C. Jacquini*.

COPERNICIA (named in honour of the celebrated German astronomer, Copernicus). ORD. *Palmeæ*. A very small genus of about eight species of unarmed stove palms, with erect trunks, covered with the remnants of the leaf-stalks. Flowers hermaphrodite or polygamous, on axillary spadices. Leaves fan-shaped, palmate, tufted. For culture, *see* **Corypha**. The best-known species, and the only one worthy of being described here, is *C. cerifera*.

C. cerifera (wax-bearing).* Carnaüba or Wax Palm of Brazil. This species is of economic value; the upper part of the stem yields a kind of sago; the young leaves are coated with wax, which is detached by shaking them, and then melted and run into cakes. Brazil.

Other species are: *hospita*, *macroglossa*, *maritima*, *tectorum*, and *Wrightii*.

COPROSMA (from *kopros*, dung, and *osme*, a smell; in allusion to the fœtid odour emitted by the plants). ORD. *Rubiaceæ*. A genus comprising about thirty-five species of greenhouse shrubs, the majority of which are natives of New Zealand and the Sandwich Islands, a few are from Australia and Oceania, and one from Juan Fernandez. None are worth cultivating for the sake of their flowers; but some deserve a place in a large conservatory for their small coral-red fruits. Cuttings should be made in March, taken off with a heel of the old wood, and placed in pots two-thirds filled with crocks, above which is a thin layer of rich, light material, and on the top a layer of sand. The pots should then be put in brisk bottom heat, in a propagating frame. During the time the cuttings are making root, only a very light sprinkling with water should be given, or they will damp off. When rooted, they should be potted into rich sandy soil, and gradually hardened off in a cold frame. Another method is to place the plants in a propagating bed, and layer the shoots which overhang the pot. Old plants should be potted in a similar compost to that recommended above, and should be pruned into shape every year if necessary.

C. Baueriana picturata (Bauer's painted).* *l.* ovate, bluntly rounded; surface smooth, pale green, marked with blotches of pale yellow and creamy-white, spreading out from the midrib to one or both sides, and assuming a variety of grotesque forms. New Zealand, 1876. SYN. *C. Stockii*.

C. B. variegata (variegated).* *l.* obovate, moderate-sized, glossy, bright green in the centre, with very broad white marginal variegation, which is creamy-yellow in a young state. New Zealand, 1866. This is of compact habit, and forms, in time, a dense and handsome shrub.

C. Stockii (Stock's). A synonym of *C. Baueriana picturata*.

COPTIS (from *kopto*, to cut; in reference to the numerous divisions of the leaves). ORD. *Ranunculaceæ*. Very pretty little hardy evergreen bog plants, thriving well in a moist peat or very sandy moist soil. They may be propagated either by division of the roots, or by seed.

C. asplenifolia (Asplenium-leaved). *fl.* white; scape two-flowered, at first shorter than the leaves; petals five, very long and narrow, dilated and concave-cucullate in the middle, filiformly attenuated upwards. *l.* biternate; leaflets somewhat pinnatifid, acutely serrate. *h.* 1ft. North-west America and Japan.

C. occidentalis (Western).* *fl.* white; scape short, three-flowered; petals about six, not hooded. *l.* trifoliate; leaflets petiolulate, broadly ovate. *h.* 6in. to 1ft. Rocky Mountains.

C. orientalis (Eastern). *fl.* white; scape about three-flowered. *l.* ternate, each of the divisions pinnate at base, and pinnatifid above; lobes deeply cut. *h.* 3in. to 9in. Japan, 1873.

C. trifolia (three-leaved).* *fl.* white, small; scape one-flowered. April to July. *l.* trifoliate; leaflets obovate, blunt, toothed, hardly three-lobed. Roots bright yellow, fibrous. *h.* 3in. to 5in. Northern hemisphere, 1782. (B. M. Pl. 3.)

CORAL BERRY. *See* **Symphoricarpus vulgaris.**

CORAL-BUSH. *See* **Templetonia retusa.**

CORAL-TREE. *See* **Erythrina.**

CORBULARIA. *See* **Narcissus.**

CORCHORUS (from *koreo*, to purge, and *kore*, the pupil; in allusion to the supposed medicinal qualities of *C. olitorius*). ORD. *Tiliaceæ*. A genus of small shrubs or herbs. Peduncles opposite the leaves or axillary, one, two, or three-flowered; corolla yellow, small. Leaves simple, serrated, covered with simple or stellate hairs. *C. capsularis* (Jute Plant) and *C. olitorius* are stove annuals, natives of India, both attaining a height of 6ft. They have no horticultural value.

CORDATE. Heart-shaped. When this term is joined by a hyphen to another word, a form between the two is signified, as *Cordate-reniform*, between heart-

Cordate—*continued.*

shaped and kidney-shaped. A Cordate Leaf with dentate margin is shown at Fig. 510.

FIG. 510. CORDATE LEAF, WITH DENTATE MARGIN.

CORDIA (named after Euricius Cordus, whose true name was Henricus Urbanus, 1486-1535, and Valerius, his son, 1515-1544). SYN. *Varronia.* ORD. *Borragineæ.* A very large genus, comprising about two hundred species of stove or greenhouse evergreen trees and shrubs, of considerable beauty. Inflorescence terminal. Flowers sessile, in dichotomous scorpioid cymes, spikes, or densely-packed heads; corolla funnel-shaped or campanulate, five-toothed. Leaves quite entire, or toothed. They thrive in a mixture of loam, peat, and sand, or any light rich soil. Cuttings strike root readily when planted in sand, with a hand glass placed over them, in heat.

C. decandra (ten-stamened).* *fl.* white, large, very showy, fragrant, disposed in a terminal leafy corymb; corolla ten-toothed. *l.* linear-lanceolate, attenuated, scabrous, sessile, with revolute edges, hoary from down. *h.* 3ft. Chili, 1875. A very handsome greenhouse shrub. (B. M. 6279.)

C. Gerascanthus (Spanish Elm). *fl.* large, verticillate, sessile; racemes usually four together, 3in. to 4in. long; corolla white, throat villous; calyx ten-furrowed, ten-striped, downy. May. *l.* ovate-oblong, acute, quite entire, glabrous, unequal at the base, 3in. to 4in. long. *h.* 30ft. West Indies, 1789. Tree.

C. glabra (glabrous). *fl.*, corolla white, 1½in. long, campanulately funnel-shaped, glabrous; cymes bifid or trifid, scorpioid, terminal, but at length lateral. Autumn. *l.* scattered, opposite, and three in a whorl, on short petioles, lanceolate, narrowed at both ends, 6in. long, membranous, flat. Brazil, 1868. Shrub. Tops of branches, inflorescence, and petioles, scabrous from small bristles or stiff hairs. (B. M. 5774.)

C. Myxa (Myxa).* *fl.*, divisions of corolla revolute; panicles terminal and lateral, globular. *l.* oval, ovate, or obovate, repand, smooth above, but rather scabrous beneath, 2in. to 3in. long, 1½in. to 2in. broad. *h.* 10ft. to 15ft. India, 1640. Tree.

FIG. 511. FLOWERING BRANCH OF CORDIA NIVEA.

C. nivea (snowy). *fl.* white, borne in heads or spike-like clusters at ends of branches; calyx clothed with white hairs. *l.* petioled, ovate or ovate-oblong, crenate, dentate. Branches, leaf-stalks, and peduncles tomentose. *h.* 3ft. Brazil. Shrub. See Fig. 511.

C. Sebestena (Sebestena). *fl.*, corolla orange-coloured, funnel-shaped; limb spreading, five to seven-parted, with crenately undulated edges; peduncles terminal, corymbose. June to August. *l.* ovate, acute, or elliptic, quite entire, hispid, scabrous above, 4in. to 5in. long. *h.* 10ft. to 35ft. Cuba, 1728. Tree. (B. M. 794.)

C. superba (superb).* *fl.*, corolla white, campanulately funnel-shaped, large, showy; cymes at first terminal, then lateral,

Cordia—*continued.*

pedunculate. *l.* cuneate-oblong to oblong-elliptic, acuminated, acute, toothed in front; the largest are 6½in. long and 2½in. broad. Brazil. Tree. (B. M. 4888.)

CORDIACEÆ. This natural order takes its name from the large genus *Cordia.* By Bentham and Hooker, and other authorities, it is now merged into *Borragineæ.*

CORDONS. *See* **Training.**

CORDYLINE (from *kordyle*, a club; in allusion to the large fleshy roots of some of the species). Club Palm. SYN. *Tætsia.* ORD. *Liliaceæ.* A genus of greenhouse or stove palm-like plants, usually erect, unbranched, bearing a tuft of long, narrow, drooping leaves at the summit of the trunk, which in some species acquires a height of 30ft. to 40ft. Some authors regard Mr. Baker's sections as distinct genera: *Calodracon*, examples *Banksii* and *terminalis*; *Dracænopsis*, examples *australis*, *indivisa*, and *pumilio*; *Charlwoodia*, example *stricta.* Flowers white, small, solitary, in branched panicles, rarely produced on young plants; bracts two in number, one at the base of the pedicel, where it joins the peduncle, is simple; the other, opposite to it, and consequently placed in the axil of the pedicel and peduncle, is much shorter, broader, and is double, being either bifid or bipartite, always having two nerves. For culture, *see* **Dracæna.** In the following enumeration are included some of the half-score "true" species of *Cordyline*, and a great many sorts known in gardens as Dracænas, but which are nearly all varieties of *Cordyline terminalis*, a species cultivated everywhere throughout the tropics, and producing innumerable varieties from seed.

C. albicans (whitish).* *l.* long, narrow, pointed, about 2in. broad, narrowed into a long channelled petiole; bright green, with a pale green or whitish border, breaking out, in well-grown matured plants, into a conspicuous white variegation. 1869. Stove.

C. albo-rosea (white and red).* *l.* deep green, edged with rose; whitish when in a young state. 1874. Stove.

C. amabilis (lovely).* *l.* 24in. to 30in. long by 4in. to 5in. wide; ground-colour bright glossy green, which, as the plant grows, becomes marked and suffused with pink and creamy-white; young leaves in large specimens quite rosy. 1871. Stove.

C. amboynensis (Amboynan).* *l.* oblong-lanceolate, acuminate, deep bronzy-tinted green, the lower half having a distinct edging, ¼in. wide, of bright rosy-carmine; petioles tinted with rosy-purple; spreading and gracefully arched. Amboyna, 1876. Stove.

C. angusta (narrow). *l.* narrow, arching, about 1in. wide, narrowed and compressed at the base into a purplish stalk; dull dark green above, tinted with purple beneath, and becoming slightly bronzed in age. 1869. A slender-growing stove species.

C. australis (Southern).* *fl.* white, densely crowded, sweet-scented, ¼in. across. *l.* oblong-lanceolate, 2ft. to 3ft. long, and 2in. to 4in. broad, striated with numerous parallel veins. New Zealand, 1823. A very fine species for sub-tropical gardening, with a stout-branched stem, from 10ft. to 40ft. high. Hardy in warmer parts of England and Ireland. (B. M. 5636.)

C. a. lineata (lined).* A very handsome and ornamental plant, with fine, broad, gracefully recurving foliage.

C. Balmoriana (Balmore's). *l.* bronzy, with white and rosy stripes. 1875. Stove.

C. Banksii (Banks's). *fl.* white, loose, very much larger than the bracts. *l.* very long, linear-lanceolate, 5ft. to 6ft. long by 1ft. to 2ft. broad, closely striate, and also having six to eight very evident veins on each side of the prominent midrib. Stem sub-arboreous, 5ft. to 10ft. high, simple or sparingly branched. New Zealand, 1860. Greenhouse. (R. G. 444.)

C. B. erythrorachis (red-ribbed) is a form with red midrib.

C. Baptistii (Baptist's).* *l.* 18in. to 24in. long; ground-colour green, margined and striped with yellow and pink. 1873. A very distinct form, having the stem, as well as the leaves, variegated. Stove. (I. H. n. s. 334.)

C. bellula (pretty). *l.* purplish, margined with red, small. 1874. Stove. (I. H. n. s. 163.)

C. cannæfolia (Canna-leaved).* *l.* on long petioles, somewhat oblong, with an obtuse apex, which, however, is frequently split; 1ft. to 2ft. long, and 3in. to 5in. wide, slightly recurved, dark green. Queensland, &c., 1820. An elegant stove species, growing to a considerable height. See Fig. 512.

C. chelsoni (Chelsea).* *l.* large; ground-colour a glossy dark green, almost black, which, as the plant attains age, becomes mottled and suffused with deep crimson, a broad line of the same colour bordering the leaves on either side. 1870. A remarkable stove sort, with a bold free growth. (I. H. 19, 90.)

Cordyline—*continued.*

C. compacta (compact). *l.* numerous, crowded, recurved, about 7in. long, and nearly 3in. broad, oblong-ovate, of a dull green, with a slightly bronzy tint, and breaking out into broad streaks of rose-colour when fully developed; petioles 2in. long, margined and tinted with rose. 1873. Stove.

C. Cooperii (Cooper's).* An elegant variety of *C. terminalis*, with deep vinous-red gracefully-recurved leaves. One of the best for decorative work. Stove.

C. Dennisoni (Dennison's). *l.* 12in. to 15in. long, and 4in. to 5in. broad, bronzy-purple. 1871. Habit dwarf and compact. Stove. (I. H. 19, 360.)

C. Duffii (Duff's).* *l.* oblong, 6in. to 8in. wide, glossy, margined and casually barred with rich crimson; the parallel margins of the channelled petiole leaf-base converging, and elegantly shaded with light-flamed crimson. 1874. A very beautiful and robust-habited variety, of erect and stately growth. Stove.

C. excelsa (lofty).* *l.* broadly-oblong, acute, narrowed at the base into a stalk; arching, of a deep bronzy hue, margined towards the base, and also on the wing of the petiole, with a broad edge, ¼in. wide, of a very deep crimson-lake; this bright colour is sometimes continued throughout the margin of the leaf, and at others breaks into rays and blotches. 1869. Stove.

FIG. 512. CORDYLINE CANNÆFOLIA.

C. Fraseri (Fraser's).* *l.* somewhat erect, oblong, 1ft. or more in length by 5in. broad, abruptly acute at the apex, suddenly narrowed into the petiole, which is about 3in. long; blackish-purple, with a glaucous bloom, the lower portion having a margined stripe of deep rosy-lake, which extends down the edge of the petiole. 1873. Stove.

C. gloriosa (glorious).* *l.* broad-oblong, 2½ft. long by 5in. broad, with channelled marginate petioles 6in. long, the edges of which are tinted with the same colour, and it is continued along the marginal portion of the lower half of each leaf; the older leaves of this plant colour gradually, the young ones being green, and showing paler green stripes on those parts which, at a later period, have the peculiar bronzy-orange hue. 1872. Stove. SYN. *C. Shepherdi*. (I. H. 20, 85.)

C. grandis (grand). *l.* deep and bright green, bordered with white and edged with rose. Samoa, 1874. Stove.

C. Guilfoylei (Guilfoyle's).* *l.* from 1½ft. to 2ft. long, 1½in. to 2in. wide in the middle, and tapering off both ways, striped with red, light rosy-pink, very pale yellowish-white, and green, a whitish variegation invariably following the lower margins of leaf and leafstalk to its juncture with the stem. Australia, 1868. This

Cordyline—*continued.*

is a very pretty variety, with elegantly recurved foliage. Stove. (I. H. 19, 249.)

C. imperialis (imperial). *l.* of an erect arching habit, oblong, acuminate, 1½ft. to 2ft. long by 3in. or 4in. wide, deep green, rayed all over with bright crimson, or pale pink in the young leaves. 1872. The foliage is very leathery, and has a peculiar metallic hue, which contrasts well with the crimson variegation. (F. & P. 1875, 62.)

FIG. 513. CORDYLINE INDIVISA.

C. indivisa (undivided).* *l.* 2ft. to 4ft. long, 1in. to 2in. broad, tapering to a point, pendent, and dark green. New Zealand. A very graceful plant for decorative purposes. Greenhouse. See Fig. 513.

C. i. atropurpurea (dark purple).* A handsome form, having the base of the leaf and midrib on the under side dark purple.

C. i. lineata (lined). *l.* much broader than those of the type, about 4in. broad; sheathing base stained with reddish-pink.

C. i. Veitchii (Veitch's).* Similar to the type, but has the sheathing base and back of midrib of a beautiful deep red.

C. i. vera (true). *l.* excessively thick and leathery, 2ft. to 5ft. long, and from 2in. to 4in. wide, lanceolate, dark shining green; midrib and veins of a rich deep orange. Stem simple, 2ft. to 5ft. high. New Zealand. SYNS. *C. indivisa*, *Dracæna aureo-lineata*.

C. indivisa (undivided). A synonym of *C. i. vera*.

C. inscripta (inscribed). *l.* small, linear-oblong, 5in. long by 1in. broad, tapering to a point, and at the base narrowed into the margin of the petiole; colour lively green, streaked with thin lines of dull purple, which here and there break into linear markings of rose-colour; petioles erect, 2½in. long, flushed with purple. 1873. The leaves have a twisted appearance, from the irregular undulations of the margins. Stove.

C. lutescens-striata (yellowish-striped).* *l.* long, gracefully arching, fresh grass-green above, yellowish-green on the under side. 1873. Stove. (I. H. 1871, 72.)

C. Macarthuri (MacArthur's).* *l.* carmine and olive-green. 1877. Stove.

C. magnifica (magnificent).* *l.* 1½ft. to 2ft. long, sometimes 10in. in width, of a beautiful bronzy-pink colour, changing when old into a somewhat darker shade; petioles nearly purple. 1869. Stove. See Fig. 514.

C. metallica (metallic).* *l.* oblong-acuminate, somewhat erect and arching, 16in. long, of a uniform rich coppery-purplish hue when young, becoming a dark purplish bronze when mature; petioles sheathing, 4in. long, of the same colour as the leaves 1869. Stove. (F. M. n. s. 24.)

C. mirabilis (wonderful). *l.* oblong-lanceolate, very gracefully recurved, of a bronzy-green colour, margined with bright crimson-rose. 1880. Stove.

C. Mooreana (Moore's).* *l.* 4in. wide, 2ft. to 3ft. long, beautifully undulated, deep bronzy-purple; the base of the leafstalk and the midrib of a bright reddish-crimson colour. 1868. Stove.

Cordyline—*continued.*

C. nigro-rubra (black and red).* *l.* linear-lanceolate, dark brown, with bright rosy-crimson centres, the young foliage usually entirely of the latter showy colour. A fine variety, of bold erect growth. Stove.

C. ornata (adorned).* *l.* small, recurved, oblong, 8in. long, 2in. broad, dark bronzy-green, marked with a narrow margin of rosy-pink, which is continued along the edge of the petioles; petioles almost erect. 1873. Stove.

C. porphyrophylla (purple-leaved). *l.* broadly ovate-oblong, of a fine deep bronzy hue, contrasting well with the glaucous tint of their under surfaces. Habit somewhat erect-growing. 1870. Stove. (I. H. 1872, 277.)

C. pulchella (beautiful).* *l.* nearly 1in. wide, deeply bronze-tinted, of a spreading-arching habit; the contracted petiole-like base being of a deep wine-red, which colour also marks the edges of the leaves. 1870. Stove.

FIG. 514. CORDYLINE MAGNIFICA.

C. pumilio (dwarf). *fl.* white; panicle very lax, spreading, 2ft. long, with slender branches. *l.* very narrow, linear, 1½ft. to 2½ft. long, ¼in. to ⅓in. broad, with a stout prominent midrib, and a few slender veins on each side of it. Trunk short, slender, as thick as the finger, or none. New Zealand, northern islands. Greenhouse.

C. Reali (Real's). *l.* dark green, striped and edged with rose. 1874. Stove. (I. H. 20, 140.)

C. Rex (king).* *l.* erect, broadly or oblong-lanceolate, about 1ft. long, of a bronzy-green colour, flushed with rosy-purple, freely streaked with bright carmine-rose; petioles margined with purplish-rose, and the back of the costa is of the same colour. 1875. Stove.

C. Robinsoniana (Robinson's). *l.* long, lanceolate-acuminate, elegantly arched; ground-colour light green, variously striped and marked with dark bronzy-green and brownish-crimson; petioles also striped with brownish-crimson. 1877. Stove. (I. H. 1879, 342.)

Cordyline—*continued.*

C. rosacea (rose-coloured). *l.* gracefully recurving, oblong-acuminate, dark bronzy-green, broadly margined with bright pink; some of the young ones almost entirely of a light creamy-pink colour. 1872. A compact-habited dense-growing variety. Stove.

C. rubella (reddish). *l.*, young ones variegated with bluish-rose. 1872. Stove.

C. Shepherdi (Shepherd's). A synonym of *C. gloriosa.*

C. spectabilis (showy). *l.* broad oblong-acute, arching, narrowing and compressed at the base into a longish green stalk; of a deep full green, slightly bronzed from being tinged beneath with reddish-purple. 1869. An erect free-growing plant. Stove.

C. splendens (splendid).* *l.* dense, short, ovate-acute, about 9in. long, 4in. broad, arranged spirally; of a deep bronzy-green, breaking out in the young growth into bright rosy-carmine; the petioles and bases of the leaves are margined with the same colour. 1871. Stove. The colouring sometimes appears in stripes, and at others occupies the whole surface; while the recurved character of the foliage gives the plant a flat, almost table-like head.

C. stricta (upright). *fl.* light blue, rather crowded. *l.* linear-lanceolate or narrowly ensiform, contracted for some way above the bases, 1¾ft. to 2½ft. long, 1in. to 1¼in. broad, with slightly roughened margins; indistinct midrib striated with numerous parallel nerves. Trunk slender, simple, 6ft. to 10ft. high. Moreton Bay. SYN. *Dracæna stricta.* Greenhouse. (B. M. 2575.)

C. s. congesta (crowded) differs from the type in having broader and more crowded foliage. See Fig. 515.

C. sulcata (grooved). *l.* spreading, oblong, abruptly pointed; upper surface scored with numerous shallow parallel furrows, following the obliquely transverse direction of the veins; under surface slightly streaked with blackish-purple; petioles purplish. 1872. Stove.

C. terminalis (terminal).* *fl.* sub-sessile, in branched panicles. *l.* petioled, lanceolate, narrowed to both ends, dark green or

Cordyline—*continued.*

bronzy, and crimson. *h.* 10ft. to 12ft., when fully mature. South Sea Islands, and cultivated everywhere in tropical countries. From this species have originated the host of popular stove so-called Dracænas. See Fig. 516.

C. triumphans (triumphant).* *l.* narrow-lanceolate, appearing to taper into the stalk by the incurving of the winged edges of the petiole, while in the upper part the blade assumes a half-channelled form; black-purple, relieved by the glaucous hue of the under surface and of the petioles, while the edges of the young leaves towards the centre are deeply margined with rose-colour. 1875. Stove.

FIG. 515. CORDYLINE STRICTA CONGESTA.

C. Weismanni (Weismann's).* *l.* rather narrow, gracefully recurved; in a young state, light coppery-red, more or less tinged with creamy-white, changing with age to a deep bronzy hue, except at the edges, where they are margined with red. 1871. Stove.

C. Youngi (Young's).* *l.* broad, of a somewhat spreading habit, without being pendulous; in a young state, bright light green, streaked with deep red, and tinged with a rosy hue, changing with age to a bright bronze. 1872. A robust and rapid grower. Stove.

COREMA (from *korema*, a broom; referring to the habit of the plant). Broom Crowberry; Portugal Crakeberry. SYN. *Tuckermannia.* ORD. *Empetraceæ.* A genus comprising two species of hardy, much-branched, low-growing, Heath-like shrubs, of rigid habit, closely allied to *Empetrum.* Flowers dicœcious; perianth segments five or six, scale-like, sub-petaloid, much imbricated. Male: stamens three (rarely four). Female: ovary sub-globose, three (rarely two or four) celled. Drupe sub-globose. For culture, *see* **Empetrum.**

FIG. 516. CORDYLINE TERMINALIS.

C. alba (white). *fl.* white, in terminal groups. Spring. *fr.* a white, three-seeded, globose berry. *l.* obtuse, small, narrow, with revolute edges, sprinkled with resinous dots. *h.* 1ft. South-western Europe and Azores, 1774.

C. Conradii (Conrad's). *fl.* with tufted purple filaments, and purple-brown anthers. April. *l.* scattered or nearly whorled, narrowly linear. *h.* 6in. to 9in. North America and Newfoundland.

COREOPSIS (from *koris*, a bug, and *opsis*, like; referring to the appearance of the seed). ORD. *Compositæ.*

Coreopsis —*continued.*

A genus of showy annual or perennial herbaceous plants. Involucral bracts in two rows, the outer spreading, and the inner combined at the base and erect; receptacle furnished with linear chaffy scales. Leaves opposite, simple, or sub-pinnate. Seeds flat on one side, convex on the other, membranous at the edge, and the pappus with two horns. Several species of this genus are very handsome, having a distinct, bright-coloured disk. The hardy annuals are largely grown, under the name of *Calliopsis*, for summer ornamentation; for which purpose seed should be sown in March, in a gentle heat, or outside late in April. The perennials are also of easy culture in ordinary garden soil, and may be propagated by divisions of the root, in autumn or spring; or, during the summer, by young cuttings, which will strike freely in a cold frame. Annuals, except where otherwise mentioned.

C. aristosa (bearded). *fl.-heads* orange-yellow, large, numerously produced in a terminal panicle. September. *l.* deeply pinnatifid, with coarse, lanceolate segments, glabrous, much branched. *h.* 3ft. United States, 1869. See Fig. 517.

C. aurea (golden). *fl.-heads* with golden-yellow rays; disk-flowers dull yellow. Autumn. *l.* various, more commonly three to seven-divided, with lanceolate divisions. *h.* 1ft. to 3ft. United States. A glabrous biennial. See Fig. 518.

C. auriculata (auricled).* *fl.-heads* yellow, with a band of purplish-brown encircling the disk, generally solitary; peduncles very long and slender. Summer. *l.* entire, or sometimes three-lobed. *h.* 1ft. to 1½ft. United States, 1699. Perennial. See Fig. 519.

FIG. 517. FLOWERS OF COREOPSIS ARISTOSA.

Coreopsis *continued.*

C. bicolor. A synonym of *C. tinctoria.*

C. cardaminefolia (Cardamine-leaved). *fl.-heads* yellow; lower part of ray-florets brown-purple. Summer. *l.* once or twice pinnately divided. *h.* 6in. to 2ft. United States. See Fig. 520.

FIG. 518. FLOWERS AND BUDS OF COREOPSIS AUREA.

C. coronata (crowned). *fl.-heads* orange, spotted with brownish-purple; peduncles elongated. Summer, autumn. *l.* opposite, in remote pairs, spatulate, tapering at base, undivided, or cut in a pinnated manner. Stem erect. *h.* 2ft. Texas, 1835. (B. M. 3460.)

C. diversifolia (diverse-leaved). A synonym of *C. Drummondi.*

C. Drummondi (Drummond's).* *fl.-heads* yellow, with a circle of rich crimson-brown around the eye. Summer. *l.* pinnate, with ovate or lanceolate lobes. *h.* 1ft. Texas, 1834. A dwarf, spreading, slightly hairy species. SYN. *C. diversifolia.* See Fig. 521. (B. M. 3474.)

C. grandiflora (large-flowered).* *fl.* bright yellow; ray-florets five-toothed, deeply cut; peduncle elongated, one-flowered. Summer. *l.* opposite, connate, almost sessile, fringed with hair at the base. *h.* 3ft. to 4ft. United States, 1826. Perennial. (S. B. F. G. 175.)

C. lanceolata (lance-shaped).* *fl.-heads* bright yellow, 2in. to 3in. across; ray-florets four-toothed; peduncles long, usually one-flowered. Summer. *l.* lanceolate, entire, fringed with hairs; upper ones slightly connate at the base. Stem sometimes branched at the base. *h.* 1ft. to 3ft. North America, 1724. Perennial.

C. maritima. *See* **Leptosyne maritima.**

C. nudata (naked). *fl.-heads* pale bluish, or violet, the size of a small single Dahlia. August. *l.* few, opposite, linear subulate, rush-like. *h.* 2ft. to 4ft. Florida (swamps), 1879. (B. M. 6419.)

C. rosea (rose). *fl.-heads* with rose-red rays and yellow disk-flowers; ray-florets coarsely three-toothed or lobed. Summer. *l.* opposite, linear or nearly so, entire, or the lower ones two to three-toothed or tripartite. *h.* 1ft. United States.

C. tenuifolia (slender-leaved). A synonym of *C. verticillata.*

C. tinctoria (colouring).* *fl.-heads* yellow, with a purple-brown blotch at the base; ray-florets few, broad, jagged at the tip. *l.* pinnate; segments linear. *h.* 2ft. United States. A very pretty slender-growing annual, of which there are several varieties, differing in the colour of the flowers. SYN. *C. bicolor.* (B. M. 2512.)

C. t. nana (dwarf). *fl.-heads,* rays yellow above, brown-purple towards the base. *h.* 6in. to 1ft. A beautiful plant, differing from the type in its dwarfer habit. See Fig. 522.

Coreopsis—*continued.*

FIG. 519. FLOWERING BRANCH OF COREOPSIS AURICULATA

FIG. 520. COREOPSIS CARDAMINEFOLIA, showing Habit, detached Leaf, and Portion of Inflorescence.

Coreopsis—*continued.*

FIG. 521. COREOPSIS DRUMMONDI, showing Habit and Flower-head.

FIG. 522. COREOPSIS TINCTORIA NANA, showing Habit, detached Leaf, and Flower-head.

FIG. 523. COREOPSIS VERTICILLATA, showing Habit and Flower-head.

Coreopsis—*continued.*

C. tripteris (three-winged). *fl.-heads* yellow and brown; disk turning brownish. Autumn. *l.* opposite, stalked, three to five-divided; leaflets lanceolate, acute, entire. *h.* 4ft. to 9ft. United States. Perennial. The flower-heads, when bruised, exhale the odour of Anise. SYN. *Chrysostemma tripteris* (under which name it is figured B. M. 3553).

C. verticillata (whorled). * *fl.-heads* rich golden yellow, 1¼in. across, numerous, erect, solitary on the ends of the many subdivisions of the branches. Summer. *l.* much divided into linear segments, whorled. Stem furrowed, branched. *h.* 1ft. to 2ft. United States, 1780. Perennial. SYN. *C. tenuifolia.* See Fig. 523.

CORETHROSTYLIS (from *korethron*, a broom, and *stylos*, a style; referring to the consolidated styles being clothed with hairs). ORD. *Sterculiaceæ.* There are about eight species, all from Australia, which may be referred to this genus. It is, however, now generally sunk under *Lasiopetalum.* Greenhouse evergreen shrubs, thriving best in a compost of peat and silver sand, with the addition of a little charcoal. Propagated by cuttings of young or half-ripened wood, inserted in sandy soil, under a bell glass.

C. bracteata (bracteate). *fl.* rose-coloured, cymosely racemose, opposite the leaves; bracts leafy, rose-coloured. April. *l.* cordate, entire. Plant beset with stellate hairs. *h.* 3ft. 1843. (B. R. 1844, 47.)

CORIACEOUS. Of the consistence of leather; thick and tough.

CORIANDER. *See* **Coriandrum.**

CORIANDRUM (a name used by Pliny, derived from *coris*, a bug; in reference to the fœtid smell of the leaves). Coriander. ORD. *Umbelliferæ. C. sativum* is a hardy annual, native of Southern Europe, but occasionally found in a semi-wild state, in waste places in the South and East of England. The young leaves of this plant are occasionally employed in soups and salads, and the seed are used in confectionery, and for other flavouring purposes. They ripen about August, and should be sown, in a warm position, in autumn, and again in spring. If the leaves are required, small quantities of seed should be sown about every month for succession, in drills 1ft. apart.

C. sativum (cultivated). *fl.* white; umbels of three or four rays, without any involucre; involucels of three dimidiate leaves. *l.* decompound. Stems terete. *h.* 1½ft.

CORIARIA (from *corium*, a hide; referring to the crustaceous covering of the fruit). ORD. *Coriarieæ.* Ornamental dwarf-growing suffruticose shrubs, natives of South Europe, North Africa, Japan, Himalayas, New Zealand and the Andes. Flowers green, small, hermaphrodite, or polygamous; sepals five, spreading, imbricate, persistent; petals smaller than the sepals, thickened after flowering, and embracing the fruit; stamens ten, hypogynous, free, or the alternate adnate to the petals; racemes axillary. Carpels five to ten. Leaves opposite, rarely ternately whorled, quite entire, sessile, exstipulate. Coriarias are of easy culture in common garden soil. Propagated by suckers or layers, put down in autumn. *C. myrtifolia* is the only hardy species; the two others mentioned do well in a conservatory or cool greenhouse.

C. myrtifolia (Myrtle-leaved).* Myrtle-leaved Sumach; Tanners'-tree. *fl.* greenish; racemes rather erect, terminating the branches and branchlets, leafy at the base. May to August. *l.* ovate-lanceolate, simple, opposite. Branches somewhat tetragonal, opposite or tern. *h.* 4ft. to 6ft. South Europe, 1629.

C. nepalensis (Nepaulese). *fl.* brown. May. *h.* 10ft. Nepaul.

C. sarmentosa (sarmentose). *fl.* green. June. *h.* 3ft. New Zealand, 1823. (B. M. 2470.)

CORIARIEÆ. An interesting natural order, consisting of but the single genus *Coriaria*, from which it takes its name.

CORIS (a name adopted from Dioscorides). ORD. *Primuleæ.* The only species of this genus is a pretty dwarf branching hardy perennial. It thrives on sunny parts of rockwork, in a dry, sandy, peaty soil. Increased by seed, sown, as soon as ripe, in a cold frame.

C. monspeliensis (Montpelier).* *fl.* bright lilac, with orange anthers; disposed in elongated terminal heads. Summer. *l.* linear, acute, with revolute margins, sessile, patent, clothing the stem from the base to the top. *h.* 6in. Mediterranean region, 1640. (B. R. 536.)

CORK-TREE. *See* **Quercus Suber.**

CORNACEÆ. A small order of trees or shrubs, rarely herbs. Flowers in terminal or axillary umbels, cymose clusters, or sometimes involucrate heads. Leaves opposite or alternate, exstipulate. There are about twelve genera, the three best-known being: *Aucuba, Cornus,* and *Garrya.*

CORN BLUE-BOTTLE. A common name of **Centaurea Cyanus** (which *see*).

CORN COCKLE. *See* **Githago segetum.**

CORNEOUS. Horny; of the consistence of horn.

CORN FLAG. *See* **Gladiolus.**

CORNICULATE. Having processes like small horns.

CORNISH MONEYWORT. *See* **Sibthorpia europæa.**

CORN MUSTARD. *See* **Sinapis arvensis.**

CORN SALAD, or **LAMB'S LETTUCE** (*Valerianella olitoria*). Annual. This is not largely used in this country, but still, it makes a very good change in the salad bowl. In summer, the whole plant may be used, as it is then tender, being in active growth. About four sowings will be found sufficient, and, if these are made in February, April, August, and September, a fair supply will be kept up, quite sufficient for any ordinary household. The ground should be deeply dug, but it need not be heavily manured. Sow the seed in rows, about 9in. asunder, and thin out to 6in. apart in the rows. Keep the plants clear of weeds, and, in winter, during hard frost, throw a little dry litter over the bed.

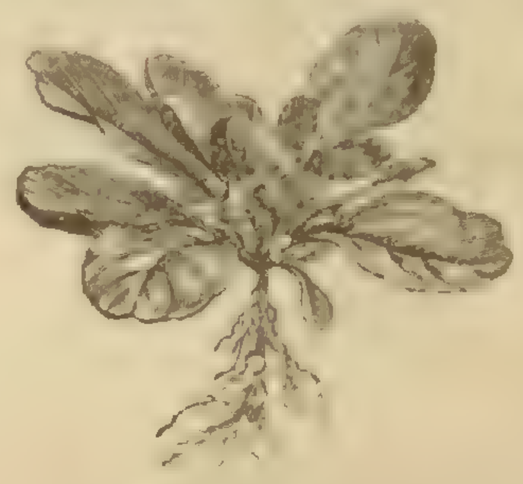

FIG. 524. CORN SALAD.

Sorts. The common Corn Salad (see Fig. 524), the Round-leaved (a stronger-growing form, with larger leaves), and the Italian, are the varieties usually cultivated. The latter is supposed to belong to another species.

CORNUS (from *cornu*, a horn; the wood is thought to be as hard and durable as horn). Dogwood. ORD. *Cornaceæ.* Hardy deciduous trees and shrubs, sometimes low herbs. Flowers sometimes capitate and umbellate, involucrated; sometimes corymbose and panicled, without involucre. Leaves, with few exceptions, opposite, entire, sometimes alternate or in whorls. All the woody species are desirable for shrubberies. Many will grow under the drip of trees; this renders them valuable for thickening strips of plantations which have become naked below. They may be readily increased by cuttings, by layers, or by suckers, either of which operations should be performed in autumn. *C. canadensis* and *C. suecica* should be grown in sandy peaty soil, in a rather shady situation, on the rockery, or in a border; they may be increased by dividing, when the plants have run considerably at the roots. *See also* **Benthamia.**

C. alba (white). A synonym of *C. stolonifera.*

C. canadensis (Canadian).* Bunch-berry, Dwarf Cornel. *fl.* purplish-white, umbellate, much shorter than the leaves of the involucre, which are white, ovate, and acuminated. May. *l.*, upper ones in whorls, ovate, acuminated, veiny, on short petioles. Stems simple, herbaceous. *h.* 6in. North America, 1774. Small herb. See Fig. 525. (B. M. 880.)

C. circinata (round-leaved). Round-leaved Cornel. *fl.* white; cymes flat. June. *fr.* spherical, light blue. *l.* larger than in most other species, round, oval, abruptly-pointed, clothed with

Cornus—*continued.*

hoary tomentum beneath. Branches warted, greenish. *h.* 5ft. to 10ft. United States, 1784. Shrub. (T. S. M. ed. ii. 464.)

FIG. 525. CORNUS CANADENSIS.

FIG. 526. FLOWERS OF CORNUS FLORIDA.

C. florida (Floridan).* Flowering Dogwood. *fl.* greenish-yellow, umbellate, rising after the leaves. April. *l.* ovate, acuminate, pale beneath, and beset with adpressed hairs on both surfaces; bracts of the involucre large, white, roundish, retuse or nearly obcordate. *fr.* oval. *h.* 20ft. to 30ft. United States, 1731. This is a beautiful tree; the bark is extremely bitter. See Fig. 526. (B. M. 527.)

C. mas (male).* Cornelian Cherry. *fl.* yellow, rising before the leaves; umbels about equal in length to the four-leaved involucre, February to April. *l.* oval, acuminated, rather pubescent on both surfaces. Branches smoothish. *h.* 10ft. to 15ft. Europe (Britain excepted), 1599. SYN. *C. mascula.* (S. F. G. 151.) Of this there is a form (*variegata*) having leaves variegated with white, and another (*elegantissima*) in which the foliage is beautifully marked with creamy-white and tinged with red. Both are excellent garden plants.

Cornus—*continued.*

C. mascula (manly). A synonym of *C. mas.*

C. oblonga (oblong). *fl.* white or pale purplish, fragrant; calyx clothed with adpressed silvery hairs, as well as the pedicels and petals; corymbs spreading, panicled. *l.* oblong, acuminated, acute at the base, glaucous and rather scabrous beneath, with many excavated glands along the axils of the ribs and nerves. *h.* 10ft. to 15ft. Nepaul, 1818. Tree.

C. paniculata (panicled).* *fl.* white; cymes convex, loose, often panicled; ovary silky. July and August. *fr.* white. *l.* ovate acuminated, glabrous, hoary beneath. Branches erect, pale purplish. *h.* 4ft. to 8ft. United States, 1758. Shrub. (T. S. M. ed. ii., 465.)

C. sanguinea (blood-coloured).* Dogberry; common Dogwood. *fl.* greenish-white, not pleasantly scented; cymes corymbose, ebracteate; petals revolute at the sides. June. Berry small, black. *l.* ovate, or ovate-oblong, acute, pubescent, 2in. to 3in. long. Branches straight, of a dark red when full grown. *h.* 6ft. to 8ft. Europe (Britain), North and West Asia, Himalayas. Shrub. Wood used for skewers, formerly for arrows; and by gunpowder makers. The berries yield an oil, used in France for soapmaking. (Sy. En. B. 635.)

C. sericea (silky).* *fl.* white; corymbs depressed, woolly. June and July. Berries pale blue, globose. *l.* ovate, acuminated, clothed with rusty pubescence beneath. Branches spreading; branchlets woolly. *h.* 5ft. to 8ft. United States, 1683. (T. S. M. ed. ii., 466.)

C. stolonifera (stoloniferous). Red Osier Dogwood. *fl.* white; cymes small, flat. May. *l.* ovate, acute, pubescent, hoary beneath. Branches, especially the annual shoots, of a bright red-purple colour; branchlets glabrous. *h.* 4ft. to 10ft. North America, 1741. SYN. *C. alba.* There are several varieties of this shrub.

C. stricta (upright).* *fl.* white; cymes loose, flattish. June. *l.* ovate, acuminated, glabrous, green on both surfaces. Branches straight, fastigiate, reddish-brown. *h.* 8ft. to 15ft. United States, 1758. Shrub. There is a form having leaves variegated with white or yellow.

S. suecica (Swedish).* *fl.* dark purple, in terminal umbels, supported by four white bracts, which finally turn green. June. Berries red, sweetish. *l.* opposite, sessile, ovate. *h.* 6in. North and Arctic Europe (Britain), Asia, and North America.

CORNUTIA (named after Jacques Cornutus, a French physician, who travelled in Canada; he died in Paris, in 1651, after publishing his "Historia Plantarum Canadensium"). SYN. *Hosta.* ORD. *Verbenaceæ.* A small tropical American genus, containing about six species of ornamental greenhouse evergreen shrubs, allied to *Callicarpa.* They succeed well in a mixture of loam and peat. Cuttings strike readily in sand, if placed under a glass, in bottom heat, during February or March. Perhaps the only species in cultivation is *C. pyramidata.*

C. punctata (dotted). A synonym of *C. pyramidata.*

C. pyramidata (pyramidal). *fl.* blue; panicle terminal, naked, elongated. July. *l.* elliptical, ovate, toothed, hoary. *h.* 4ft. West Indies, 1733. SYN. *C. punctata.* (B. M. 2611.)

COROKIA (from *Korokia*, the native name). ORD. *Cornaceæ.* A genus containing a couple of species of ornamental half-hardy evergreen shrubs, confined—as far as is at present known—to New Zealand. Flowers axillary or terminal, solitary, or in panicles; calyx limb five-toothed; petals five, small, valvate, with a small scale at their base, silky outside, yellow; stamens five, filaments short. Leaves alternate, exstipulate, evergreen, quite entire, coriaceous. Branchlets and leaves below silvery, with appressed pubescence. *C. Cotoneaster* has proved quite hardy in a few districts, and would probably be such in many more, if afforded a little protection during winter. Corokias are of easy culture, in moderately good garden soil. They may be propagated by cuttings, planted in sand, under a glass; or by layers, put down in autumn.

C. buddleioides (Buddleia-like). *fl.* similar to those of *C. Cotoneaster*, but borne in short terminal panicles, from six to

Corokia—*continued.*

twenty-flowered. *l.* shortly stalked, narrow lanceolate, or oblong-lanceolate, 2in. to 6in. long, ½in. wide. *h.* 10ft. to 40ft. 1835. An upright shrub or small tree. (R. G. 679.)

C. Cotoneaster (Cotoneaster).* *fl.* yellow, sweet-scented, ¼in. long; petals downy on the outer surface; peduncles solitary, axillary. *l.* alternate or fascicled, ⅓in. to 1in. long, orbicular, oblong-ovate or obovate, suddenly contracted in a flat linear petiole; margins recurved. A low, rigid, spreading, much-branched shrub.

COROLLA. The inner whorl of floral envelopes.

COROLLIFLORÆ. A sub-class of Exogens, the vast majority of which are furnished with both calyx and corolla. The petals are occasionally (though rarely) free, sometimes altogether absent; corolla generally irregular, sometimes quite regular; petals generally connate into a two or more lobed corolla; ovary either superior or inferior; stamens epigynous, epipetalous (rarely hypogynous).

CORONA. Literally, a crown; botanically, applied to any appendage that comes between the corolla and the stamens, as the cup of a Daffodil or the rays of a Passion-flower.

CORONILLA (from *corona*, a crown; the flowers are disposed in heads or umbels at the tops of the peduncles). Crown Vetch. ORD. *Leguminosæ.* Ornamental shrubs, or annual and perennial herbs. Peduncles axillary, bearing at their tops umbels of pedicellate flowers. Leaves impari-pinnate. The greenhouse species thrive in a compost of two-thirds loam and one-third turfy peat. Cuttings strike freely if placed in cold frames or a cool house, under a hand glass, in spring, and, when callused, introduced to gentle bottom heat. As soon as rooted, they should be transferred to 60-sized pots, and placed in a frame near the glass, plenty of drainage being given. In order to make them grow bushy, the tops should be freely pinched out; and, as the plants fill the small pots with roots, they should be removed to 48-sized ones, and again returned to the frame. Plenty of air should be given, and, on mild days, the plants may be entirely uncovered; but they need constant attention to watering, as, if allowed to get dry, they become naked at the bottom, which altogether spoils their appearance. Continue to change the pots as required, and, about the first week in September, remove the plants to the greenhouse, where they may remain until the end of May; they should then be again transferred to the open air, in a sheltered position. The hardy species may be propagated by division, in spring; or the young cuttings of some will root in a cold frame. They are also increased by seed, which should be sown as soon as ripe, in a cold frame. The smaller-growing species are admirably adapted for the rockery.

C. coronata (crowned).* *fl.* yellow; umbels many-flowered. July and August. *l.*, leaflets seven to thirteen, obovate, mucronate, glaucous; lower ones approximating the stem; stipules concrete, small, opposite the leaves, bidentate at the apex. *h.* 1ft. to 2ft. South Europe, 1776. Plant suffruticose, erect, or ascending. Greenhouse. SYN. *C. montana.* See Fig. 527.

C. cretica (Cretan). *fl.* white, having the vexillum streaked with red, and the keel dark purple; umbels three to six-flowered. June. *l.*, leaflets eleven to thirteen, cuneated, retuse; the lower ones remote from the stem; stipules small, acute. South Europe, 1731. Plant ascending, annual. Greenhouse. (S. F. G. 713.)

C. Emerus (Emerus). Scorpion Senna. *fl.* yellow; peduncles three to five-flowered. April. *l.*, leaflets five to seven, obovate. *h.* 3ft. to 4ft. South Europe, 1596. Hardy shrub. (B. M. 445.)

C. glauca (glaucous).* *fl.* beautiful yellow, fragrant in the daytime, but scentless at night; umbels seven to eight-flowered. May to September. *l.*, leaflets five to seven, obovate, very retuse, glaucous; lower ones remote from the stem; stipules small, lanceolate. *h.* 2ft. to 4ft. South Europe, 1722. Half-hardy evergreen shrub. An invaluable plant for greenhouse decoration. (B. M. 13.)

C. iberica (Iberian).* *fl.* yellow, large; umbels seven to eight-flowered. July. *l.*, leaflets nine to eleven, obcordate, ciliated; stipules distinct, membranous, orbicular, denticulated. Iberia, 1822. Plant herbaceous, prostrate, hardy. A very charming subject for the rockery. (L. B. C. 789.)

Coronilla—*continued.*

FIG 527. FLOWERING BRANCH OF CORONILLA CORONATA.

C. Juncea (rush-like). *fl.* bright yellow; umbels five to seven-flowered. June. *l.*, leaflets three to seven, linear-lanceolate, obtuse, rather fleshy; lower ones remote from the stem. *Branches* rush-like, terete, almost naked, slender. *h.* 2ft. to 3ft. South Europe, 1656. Half-hardy shrub. (B. R. 820.)

C. minima (smallest).* *fl.* yellow, sweet-scented; umbels seven to eight-flowered. June and July. *l.*, leaflets seven to thirteen, ovate-roundish, obtuse or retuse; lower ones remote from the stem; stipules concrete, small, opposite the leaves, bidentate at the apex. South-west Europe, 1658. Plant suffruticose, procumbent. Half-hardy. (B. M. 2179.)

C. montana (mountain). A synonym of *C. coronata.*

C. stipularis (stipular). A synonym of *C. valentina.*

C. valentina (Valencia). *fl.* deep yellow, very fragrant at night; umbels six to eight-flowered. March to November. *l.*, leaflets seven to nine, obovate, mucronulate, glaucous; lower ones remote from the stem; stipules roundish, large, deciduous. *h.* 3ft. South-west Europe, 1596. Greenhouse shrub. SYN. *C. stipularis.* (B. M. 185.)

C. varia (various).* *fl.* pink and white, or rarely white, at length drooping; umbels sixteen to twenty-flowered. June to November. *l.*, leaflets nine to thirteen, oblong, elliptic, mucronate; lower ones approximating the stem. Europe, 1640. Plant herbaceous, diffuse, flexuous, hardy. (B. M. 258.)

C. viminalis (twiggy). *fl.* pale red, having the vexillum lined lengthwise with red, changing from pale to deep purple, large; umbels six to ten-flowered. May to November. *l.*, leaflets thirteen to twenty-one, obovate, retuse, mucronate; lower ones approximating the stem; stipules ovate. *h.* 2ft. to 4ft. North Africa, 1798. Greenhouse shrub.

CORREA (named after Jose Francesco Correa de Serra, 1750-1823, a learned Portuguese, who published several treatises on plant physiology). ORD. *Rutaceæ.* Greenhouse evergreen shrubs. Pedicels one-flowered, solitary, twin or tern, axillary; petals four, somewhat connivent at the base, or joined into a long tube. Leaves opposite, entire, clothed with starry hairs. This is a most useful genus of decorative plants; they are mainly of free, moderately compact growth, so that, with a little attention in pruning and training the plants whilst young, it is not difficult to form wide uniform-shaped specimens for decorative purposes in the greenhouse or conservatory. If at all well managed, few plants flower more profusely, or continue in bloom a longer time. The advantage they have over many subjects of the same class, when used for conservatory decoration, is considerable, inasmuch as they will bear to be placed, whilst in flower, in nearer proximity to other plants for contrast, and at a distance from the light, without taking much harm; and neither foliage nor wood are subject to attacks of mildew, or likely to suffer from damp. Although Correas may be struck from cuttings as readily as most other hard-wooded plants, they are, for the most part, grafted on *C. alba.* By employing this mode of propagation, the better kinds

Correa—*continued.*

grow more freely, and useful-sized specimens are produced in less time than by means of cuttings. But to insure success, much attention is necessary, and some special requirements, which only those who undertake to raise considerable numbers at one time, can properly give. Therefore, in cases where only a few plants are required, by far the cheapest and best plan is to buy them; selecting clean, healthy, vigorous, young specimens, well furnished with shoots at the base. If procured in spring, say, in 5in. or 6in. pots, after having them in possession a little while, they may be shifted into pots 1in. or 2in. more in diameter. Soil for potting should consist of good fibry peat, broken up into pieces sufficiently small to drop between the ball of earth and the sides of the pot. To this should be added a good proportion of silver sand. The house or pit in which the plants are stood, should be kept rather close for two or three weeks after potting. As they become established, more air may be given, and water as required. Before active growth commences, attention should be paid to training, and in doing this no more stakes should be employed than are actually necessary; the use of these may be obviated altogether by following the far better practice of pinching back the shoots, and a good bushy growth is thereby induced. During their growing period, the plants should be freely encouraged, by keeping them well supplied with water at the roots. They should be syringed overhead in the afternoons of bright days, and the ventilators closed before the sun is off the glass, afterwards giving air for the night. After blooming, the plants should be kept moderately dry for a time; the flowering shoots may then be shortened back, maintaining as much as possible the bases of a well formed and furnished plant. For the winter, Correas should be placed in any light, airy structure with a night temperature of 40deg.

FIG. 528. FLOWERING BRANCH OF CORREA CARDINALIS.

C. alba (white). *fl.* white; petals about ½in. long. April to July. *l.* ovate, downy beneath, and rather whitish above. *h.* 10ft. Victoria, South Australia, &c., 1793. (B. R. 515.)

Correa—*continued.*

C. cardinalis (cardinal).* *fl.* bright scarlet, tipped with green, pendent, from 1in. to 1¼in. in length. March. *h.* 3ft. A slender-growing but elegant shrub; it requires close pruning. SYN. *C. speciosa.* See Fig. 528. There are several forms of this species.

C. Harrisii (Harris's).* *fl.* bright scarlet. Of medium-growth, with light green apiculated leaves, and fine branching habit. A garden hybrid, of which *C. cardinalis* is one of the parents. (P. M. B. vii. 79.)

C. magnifica (magnificent). *fl.* white, large. A rather strong-growing and free-flowering form.

C. pulchella (beautiful).* *fl.* solitary, pendulous; corolla tubular, bright salmon-colour, with the throat ciliated. April. *l.* ovate, cordate, obtuse, waved, beset with stellate pubescence; adult ones smooth. *h.* 6ft. 1824. A hybrid. (B. R. 1224.)

C. speciosa (showy). A synonym of *C. cardinalis.*

C. ventricosa (inflated). *fl.* bright crimson, tipped with green. A slender-growing twiggy sort, very pretty and distinct.

C. virens (green). *fl.* pendulous; corolla greenish, 1in. or 1½in. long. November. *l.* ovate-oblong, somewhat cordate, slightly toothed, beset with glandular tomentum. *h.* 3ft. to 8ft. New South Wales, &c., 1800. (B. R. 3.)

In addition to the above, there are many other seedlings and hybrids, among which are: *bicolor, Bidwilli, delicata, hybrida, ochroleuca* and *rosea-superba.*

CORRUGATE. Wrinkled; irregularly crumpled up.

CORSICAN PINE. *See* **Pinus Laricio.**

CORTEX. The bark, or cortical layer.

CORTICAL. Of, or belonging to, the bark.

CORTUSA (named after Jacobo Antonio Cortuso, once Director of the Botanic Garden at Padua; died 1593). Bear's-ear Sanicle. ORD. *Primuleæ.* The only species of the genus is a very pretty alpine perennial, very like *Primula cortusoides.* It thrives in a compost of moist loam, peat, and sand, with a semi-shaded position, if protected from the wind. Propagated by seed, which must be sown as soon as ripe, in a cold frame; also by carefully dividing the roots. Although, for garden purposes, the two plants are here treated as species, *C. pubens* is a mere form of *C. Matthioli.*

C. Matthioli (Matthioli's). *fl.* purple, umbellate, drooping; corolla funnel-shaped or campanulate, with a short tube and sub-erect limb; scape about 6in. high. Early summer. *l.* petiolate, rotundate, irregularly toothed or lobed. Swiss Alps, 1596. (B. M. 987.)

C. M. grandiflora (large-flowered). *fl.* much larger than in the type, very copious, upon stout peduncles 18in. to 24in. high. *l.* also much larger. Siberia, 1880. This is a very vigorous variety.

C. pubens (downy). *fl.* magenta-purple, drooping, on slender peduncles 4in. to 6in. high. May to June. *l.* stalked, covered with short silky down. Transylvania, 1878. A smaller plant than *C. Matthioli.*

CORYANTHES (from *korys*, a helmet, and *anthos*, a flower; in reference to the shape of the lip). Helmet-flower. ORD. *Orchideæ.* Very extraordinary and ornamental stove epiphytal orchids. The most remarkable species is *C. macrantha*, and some account of it may be gleaned from the following description, which appeared in the "Botanical Register," over forty years ago: "The plant has the habit of a Stanhopea, and pushes forth from the base of its pseudo-bulbs a pendulous scape, on which two or three flowers are developed; each flower is placed at the end of a long, stiff, cylindrical-furrowed ovary, and, when expanded, measures something more than 6in. from the tip of one sepal to that of the opposite one. The sepals and petals are nearly of the same colour, being of an ochrey-yellow, spotted irregularly with dull purple. The lip is as fleshy and solid in texture as the sepals and petals are delicate; it is seated on a dark purple stalk, nearly 1in. long. This stalk terminates in a hemispherical greenish-purple cup or cap, and the latter, contracting at its front edge, extends forward into a sort of second stalk of a very vivid blood-colour, the sides of which are thinner than the centre, turned back, and marked with four or five very deep, solid, sharp-edged plaits These edges again expand and form a second cup, less lobed than the first, thinning away very much to the edges, of a

Coryanthes—*continued.*

broad conical figure, with a diameter of at least 2in. at the orifice; this second cup is of an ochrey-yellow, streaked and spotted with pale crimson, and seems intended to catch a watery secretion, which drips into it from two succulent horns, taking their origin in the base of the column, and hanging over the centre of the cup." For culture, *see* **Stanhopea.**

C. macrantha (large-flowered).* *fl.* lasting but three or four days in bloom. May, June, and July. Caraccas. (B. R. 22, 1841.) *See also* description given above.

C. maculata (spotted). *fl.* pale ochraceous-yellow, spotted with purple, lasting but three days in beauty. Summer. Demerara, 1829. (B. M. 3102.)

C. speciosa (showy). *fl.* pale yellow, ephemeral in consistency. April. Brazil, 1826. SYN. *Gongora speciosa.* (B. M. 2755.)

FIG. 529. FLOWERS OF CORYDALIS BRACTEATA.

CORYDALIS (the old Greek name for the Fumitory; from *korydalos*, a lark; the spur of the flower resembles the spur of a lark). ORD. *Fumariaceæ.* A genus of very pretty, smooth, usually glaucous herbs. Racemes terminal or opposite the leaves, with a bract under each pedicel; petals four, the two outer larger, one or both gibbous or spurred, often coherent, in two usually very dissimilar pairs. Leaves much divided, alternate, sub-opposite at the tips. Roots fusiform, tuberous, or fibrous. There are about seventy species. They are well adapted for borders and rockwork; and some of them will thrive well under trees, if the ground be not too dry. The method of culture is exceedingly simple. They are increased by dividing the plants directly after flowering, or by seed; the bulbous-

Corydalis—*continued.*

rooted species by offsets; and the annuals by seed, which may be sown in spring where they are intended to remain.

C. aurea (golden). *fl.* golden-yellow, ½in. long; spur blunt, shorter than pedicel. May to July. *l.* glaucous, bipinnate; pinnæ pinnatifid and cut; lobes oblong-linear. Stem diffuse, branched. *h.* 6in. United States, 1683. Annual or biennial. (B. R. 66.)

C. bracteata (bracteate).* *fl.* sulphur-yellow, horizontal, 1in. long; spur longer than the pedicel. May, June. *l.* two, biternate; segments cleft into linear lobes. Stem simple, erect, scaly near the base. *h.* 9in. Siberia, 1823. Hardy perennial. See Fig. 529.

C. bulbosa (bulbous). A synonym of *C. solida*.

C. cava (hollow-rooted).* *fl.* purple, horizontal; bracts ovate, entire. February to May. *l.* two, biternate; segments cuneated, cleft. Stem simple, not scaly. *h.* 6in. Europe, 1596. Perennial. SYN. *C. tuberosa*. (B. M. 232.)

C. c. albiflora (white-flowered).* Similar in every respect, except the pretty white flowers.

C. claviculata (tendrilled). *fl.* straw-coloured; spur short, and blunt. June. *l.* bipinnate; petioles tendrilled; segments oval, and entire. Stem branched, diffuse, scandent. *h.* 1ft. to 4ft. West Europe (Britain), from Denmark to Spain. Annual. (Sy. En. B. 70.)

C. fungosa. *See* **Adlumia cirrhosa.**

C. glauca (glaucous). *fl.* red and yellow; spur blunt, one-half or three times shorter than the corolla. July. *l.* bipinnate, glaucous; pinnæ somewhat pinnatifid; segments stalked, cuneated, trifid. Stem erect, branched. *h.* 1ft. to 1½ft. Canada, 1683. Annual. (B. M. 179.)

C. Kolpakowskiana (Kolpakowsky's).* *fl.* pink or purple, with long spurs; bracts as long as the pedicels. *l.* glabrous, deeply divided. *h.* 6in. Turkestan, 1879. Perennial. (R. G. 948.)

C. Ledebouriana (Ledebour's). *fl.* pinkish, with a dark spot at the apex of the sepals. *l.* ternately divided, glaucous. *h.* 6in. Altai, 1879. Perennial. (R. G. 981.)

C. lutea (yellow).* *fl.* yellow; bracts linear-subulate, three times shorter than the pedicel. May. *l.* biternate; segments obovate, cuneated, trifid. Stem branched, diffuse. *h.* 1ft. Europe, naturalised in Britain (on old walls, &c.). Perennial.

C. Marschalliana (Marschall's).* *fl.* sulphur-coloured; spur straight or hardly incurved, blunt; bracts ovate. April. *l.* two, situated above the middle of the stem, biternate; lobes oval, entire or bifid. *h.* 9in. Tauria, 1823. Perennial.

FIG. 530. CORYDALIS NOBILIS, showing Habit, and Side View of Single Flower.

C. nobilis (noble-flowered).* *fl.* pale yellow, tipped with green; spur long, blunt and incurved at the point; bracts acute, entire or cut. May. *l.* bipinnate; segments cuneated, cut at the top. Stem simple, erect, not scaly. *h.* 9in. Siberia, 1783. A beautiful perennial plant. See Fig. 530. (G. C. n. s., xix. 725.)

C. Semenowii (Semenow's).* *fl.* deep yellow; spur short, saccate, bent downwards. April, May. *l.* glaucous, green, bipinnatisect; pinnules oblong ovate; lobes acuminate. Stem erect, simple, leafy. *h.* 1ft. to 1½ft. Turkestan. See Fig. 531.

Corydalis—*continued.*

FIG. 531. CORYDALIS SEMENOWII, showing Inflorescence and Leafy Stem.

C. sibirica (Siberian). *fl.* yellow, usually recurved; bracts linear, nearly as long as the pedicels. June. *l.* somewhat glaucous, bipinnate; segments cut into oblong-linear lobes. Stem nearly erect, branched. *h.* 1ft. to 3ft. Siberia, 1810. Perennial.

FIG. 532. CORYDALIS SOLIDA, showing Habit, and Side View of Single Flower.

C. solida (solid).* *fl.* purplish, large. April, May. *l.* three or four, stalked, biternate; segments cuneated or oblong, and, as well as the bracts, cut at the top. Stem simple, erect, scaly under the lower leaf. *h.* 6in. Europe, naturalised in Britain (in woods and rather humid places). Perennial. SYN. *C. bulbosa*. See Fig. 532.

C. tuberosa (tuberous). A synonym of *C. cava*.

CORYLACEÆ. This order (the principal genera of which are *Carpinus*, *Castanea*, *Corylus*, *Fagus*, and *Quercus*), founded by Lindley, is now included under *Cupuliferæ*.

CORYLOPSIS (from *Korylos*, the Hazel-tree, and *opsis*, like; Nut-like). ORD. *Hamamelideæ*. Very ornamental and interesting hardy deciduous shrubs, in habit, leaves, and inflorescence, resembling Hazels. Flowers appearing before the leaves, in pendulous racemes, each flower nearly sessile, with a large sheathing bract; petals and stamens five; perigynous scales five, alternating with the stamens, or ten to fifteen irregularly placed. Capsule woody, with narrowly ellipsoid shining black seeds. All

Corylopsis—*continued.*

the species are mentioned below. For culture, *see* **Hamamelis**.

C. himalayana (Himalayan). *fl.* yellow, white; racemes many-flowered. March. *l.* round, ovate, or acute, often cordate at the base, plicate, glabrous above, silky or tomentose beneath. *h.* 6ft. Khasia Mountains and Bhotan. (B. M. 6779.)

C. multiflora (many-flowered), from the tea districts of Tokien, in China, has not yet been introduced. It has few-nerved, rather rigid leaves, glaucous beneath, and long dense-flowered racemes.

C. pauciflora (few-flowered) resembles *C. spicata* in colour, scent, habit, &c.; but the leaves are smaller, the racemes contain fewer (two to four) flowers, and the plant is dwarfer. Japan.

FIG. 533. FLOWERS OF CORYLOPSIS SPICATA.

C. spicata (spicate).* *fl.* pale yellow, with a fragrant Cowslip-like odour; issuing singly from the axil of a greenish-yellow bract; racemes eight to twelve-flowered, 2in. to 3in. long, drooping. February. *l.* long-stalked, acutely cordate, strongly feather-veined, mucronately serrated, somewhat hoary beneath. *h.* 3ft. to 4ft. Japan, 1864. See Fig. 533.

CORYLUS (from *korys*, a hood, or helmet; in reference to the calyx covering the nut). Hazel; Cob-nut. ORD. *Corylaceæ*. Low trees and large shrubs, deciduous. Male flowers whitish, in cylindrical catkins; bracts sessile, imbricate. Female flowers red, in a bud-like catkin, which is developed into a branchlet. Leaves simple, alternate, exstipulate.

CULTIVATION. The first object in successful Nut culture is to keep down suckers, unless required for propagation. The more tree-like the plants, the more productive they are; hence the importance of removing all latent buds from the base and stems of seedlings or plants of any description. The height of clear stem may vary from 1ft. to 6ft. The trees are classified, according to the height of their stems, as standards, half-standards, and dwarf standards; the natural or many-stemmed bush

Corylus—*continued.*

being generally termed a Nut or Filbert stool. As the crop may be considered a permanent one, the soil should be carefully prepared, by trenching and manuring. A good deep loam, in a rather dry, sunny position, suits Hazels best, as it encourages the production of short fruit-bearing wood. During severe winters, the male blossoms are sometimes injured by frost. In other seasons, and in certain localities, the cultivated Filbert produces few catkins. In either case, these should be collected from wild Hazel-nuts, when obtainable, and suspended among the better varieties. When planting, choose well-established suckers, or layers, four or more years old. Firmly stake them as soon as inserted, and place a spadeful or two of manure on the soil, over the roots. The intermediate spaces may be cropped with potatoes, or other dwarf vegetables, for a year or two.

PROPAGATION may be effected by seed, by suckers, or by layers. Grafting and budding are each practicable, and are adopted when growing tall standards or scarce varieties.

Seed. For forming tall standards, seedlings of the Constantinople Nut (*C. Colurna*), one of the strongest-growing of all the Hazels, should be used. These should be allowed to run up to a height of 8ft. or 10ft., and then be grafted with any desired variety. The seed of all Nuts may be sown as soon as gathered, or stored in sand till the following February or March. They should be placed thinly in rows, and covered with at least 2in. of soil. Most of the Nuts will have started before midsummer. In October or November of the second year, plant them in lines, 2ft. to 3ft. apart, and from 6in. to 15in. from each other in the rows, according to their strength. The seed of good varieties seldom produce others equal to their parents in quality; consequently, this plan of propagation should not be practised with them.

Suckers. For market and garden purposes, all superior varieties should be propagated by suckers or layers. The Filbert, if left to its own habit, produces suckers in abundance. Good cultivators remove all these; but the propagator encourages their growth, as each one forms a plant. If the soil is poor, the stools should be manured. Sometimes it may be well to take them up bodily, in the autumn, to obtain good roots to each sucker; but, generally, the latter may be removed without disturbing the stools. Another crop may be obtained the following autumn. The small plants should be put out like the two-year-old seedlings, when they will soon grow into useful sizes. The large ones, some of which may be 2ft. to 3ft. high, are best planted out at wider distances, or in their fruiting quarters, at once.

Layers. Stools kept for layering must be allowed to make more growth than those used for suckers only, as a certain length and flexibility of shoot are essential to successful propagation by this method. Free growth must be encouraged for a year or two, and, any suitable time in winter, the shoots should be bent to the ground, pegged firmly, and covered to a depth of 3in. with earth. They will be well rooted by the following autumn, and may then be removed and planted out permanently.

PRUNING, as distinct from mere heading back, is an important feature in Filbert culture. Even the time to prune becomes a matter of vital moment; for, by performing this operation too early, a great many of the male catkins may be cut away. March, or even April, when the female blossoms are fully open, is the best time. The plants bear on the lateral growth of the previous summer, and most plentifully on moderate-sized wood. Hence, the young shoots should be stopped to insure such growth, and as much as possible of the old wood that has already borne fruit, removed annually. The shape to which Filberts are often formally trained for cultivation in gardens is that of a cup or vase. The stem is kept quite clear for 1ft. or more at the bottom, and the head is formed by not

Corylus—*continued.*

less than six branches trained in the shape alluded to. These, when old enough, produce the lateral growths for fruit production, and the young free growths at the top are generally loaded with the male catkins in spring.

PLANTING is best performed in October. The proper distance apart is from 10ft. to 20ft. each way. Some of the fertile dwarf varieties may be inserted closer. On rich soils, Filberts grow much wider and higher, many of the stronger ones reaching a height of 20ft., with a spread of branches as much or more in diameter. Such vigorous growth is not to be encouraged, as it does not conduce to free fruitfulness.

GATHERING AND STORING. Neither Filberts nor Nuts should be gathered till quite ripe, which is easily known by the brown colour of the Nut, the tint of the husk, and the ease with which the Nuts leave the latter. Filberts will not keep well in the husks if gathered before they are ripe. Nor must they be left until so ripe as to allow the Nuts to leave the husks when the trees are slightly agitated. In order to prevent the husks becoming mouldy when stored, they should first be well dried. Some cultivators expose them to sulphur fumes as a preventative; others store Nuts in casks or jars, and sprinkle them over with salt, for the same purpose, before covering up. They must always be kept in a cool, dry place after being packed.

DISTINCTIVE CHARACTER OF NUTS AND FILBERTS. This is so often a bewildering question to amateurs, that it may be well to explain fully. The difference lies solely in the length of the husks. Nuts with husks as long as, or longer than, the Nuts themselves, are called Filberts. All that have husks shorter than the fruit are designated Nuts. Some varieties, if this rule were strictly applied, could hardly be referred to either. Again, Filberts served without their husks are called Nuts.

INSECTS, &c. The Nut crop is sometimes much injured by the Nut Weevil (*Balaninus nucum*), which pierces and inserts a single egg within the shell of the tender Nut, in spring. This, by the time the Nut is nearly matured, forms into a small grub, and, eating its way out, falls to, and buries itself in, the ground, where it becomes a pupa, and emerges as a perfect insect the following season. The only preventative is to gather any perforated nuts that may be shaken off early in the season, and burn them. The Squirrel and Dormouse are also well-known as being most destructive animals to the Nut crop, as, apart from what are eaten by them at the time, as many as possible are stored for a future supply.

C. americana (American). American Hazel. *fl.*, males greyish; females crimson. April. Nut brown, ripe in October; involucre of the fruit roundish, campanulate, longer than the nut; limb spreading, dentately serrated. *l.* roundish, cordate, acuminate. *h.* 4ft. to 8ft. Canada to Florida, in low, shady woods, 1798. Shrub.

C. Avellana (Avellino).* Common Hazel or Filbert. *fl.*, males greyish; females crimson. April. Nut brown, ripe in October; involucre of the fruit campanulate, rather spreading, torn at the margin. *l.* roundish, cordate, pointed; stipules oblong-obtuse. *h.* 20ft. and upwards. Europe (Britain), North Africa and temperate Asia.

C. Colurna (Colurna).* Constantinople Hazel. *fl.* as in the common Hazel, but longer and larger. Nut small; involucre of the fruit double, the exterior many-partite, the inner three-partite; divisions palmate. *l.* roundish-ovate, cordate; stipules lanceolate, acuminate. *h.* 60ft. Asia Minor, 1665.

C. heterophylla (variable-leaved). *l.* cordate at the base, broadly obovate, irregularly toothed, five to seven-lobed, the lateral lobes often as long as the terminal one. Nut globose, scarcely inclosed by the large irregularly-cut bracts with spreading lobes. Eastern Asia, 1880. A very distinct shrub or small tree.

C. rostrata (beaked). Flowers and fruit as in the common Hazel. Involucre of the fruit tubular, campanulate, larger than the nut. bipartite; divisions inciso-dentate. *l.* ovate, oblong, acuminate; stipules linear-lanceolate. *h.* 4ft. to 5ft. Canada to Carolina, on mountains, 1745. A bushy shrub. This species closely resembles the common European Hazel; but is distinguished from it by its fruit being covered with the calyx, which is prolonged in the form of a long, hairy beak, whence the specific name.

Corylus—*continued.*

C. tubulosa (tubular).* Lambert's Filbert. Nut, large, oblong; shell thick and strong, the kernel being covered with a red skin; husk long, rather smooth, serrated at the edges, longer than the nut. A fine, strong-growing, free-fruiting variety. It is also known as Filbert Cob, Great Cob, Kentish Cob, Large Bond Nut, &c.

Of *C. Avellana* and *C. tubulosa* there are numerous varieties, the most important of which are enumerated below:

Alba.* White Filbert. This is one of the finest varieties in cultivation. From the peculiar structure of the husk, which contracts, rather than opens, at the outer edge, this Filbert can be kept longer in its cover than most others. This is also known as Avelinier Blanche, Wrotham Park, &c.

Cosford.* Miss Young's, Thin-shelled. Nut oblong, of excellent quality; husk hirsute, deeply laciniated, about as long as the nut. This is valuable from the thinness of its shell, as no nut-crackers are needed in order to get at its contents.

Crispa.* Cape-nut, Frizzled Filbert. Nuts thin, somewhat flattened, late; husks richly and curiously frizzled throughout, open wide at the mouth, and hanging about as long again as the nut. This is an enormous cropper, producing its fruit in clusters.

Downton Large Square.* Nut very large; shell thick and well-filled; husk smooth, shorter than the nut. A peculiarly-formed semi-square nut, of the highest quality.

Grandis.* Round Cob-nut. Nut large, short, slightly compressed, very thick and hard; husk shorter than the fruit, much frizzled and hairy. This is supposed to be the true Barcelona Nut of commerce, and is one of the finest grown. The quality is good, and is at its highest when the nut is first gathered. It has numerous synonyms, including the following: Barcelona, Downton, Dwarf Prolific, Great Cob, Prolific, and Round Cob.

Purple-leaved Filbert.* *l.* large and fine, and as deeply coloured as the finer varieties of Purple Beech. Nuts and husks of the same colour, which they retain; husks longer than the nuts, and hairy. This is a very ornamental and distinct plant for shrubbery borders, apart from its value in producing a nut of excellent quality.

Red Filbert. Avelinier Rouge, Red Hazel. Nut medium size, ovate; shell thick; husk long, hispid. A good free-bearing variety, of fine quality.

Spanish. Nut very large, oblong; shell thick; husk smooth, longer than the fruit. A very large variety, sometimes confounded with the Round Cob-nut and its synonyms.

CORYMB. A raceme, the pedicels of which are gradually shorter as they approach the summit, so that the result is a flat-headed inflorescence, as in Candytuft.

CORYNOCARPUS (from *koryne*, a club, and *karpos*, a fruit; in reference to the shape of the fruit). ORD. *Anacardiaceæ*. A greenhouse evergreen shrub. For culture, *see* **Ardisia.**

C. lævigata (smooth). *fl.* white, disposed in large, terminal panicles. *fr.* plum-like; when fully ripe, the drupaceous coat is eaten by natives, as are also the kernels after the poisonous property they are said to possess is dissipated by steaming or maceration in salt water. *l.* alternate, stalked, obovate, wedge-shaped, sub-emarginate, quite entire, glabrous. *h.* 20ft. New Zealand, 1823. (B. M. 4379.)

CORYNOPHALLUS (from *koryne*, a club, and *phallos*, a mace; alluding to the club-shaped appendix to the spadix). ORD. *Araceæ*. Allied to *Amorphophallus*. For culture, &c., *see* **Caladium.**

C. Afzelii (Afzelius'). *fl.*, spathe tubular below, expanding above into a broadly ovate-acute limb, marbled outside, purple within, and marked with white stripes; spadix dilated above into a club-shaped mass; produced at a different time from the leaves. *l.* on slender petioles 1ft. to 2ft. high; the limb is divided into three main divisions, each of which is again split up into three, rarely two, subdivisions, these latter are in their turn pinnatisect; ultimate segments varying in length and breadth, but always decurrent at the base, and sharply pointed at the apex. Tropical Africa, 1873. (G. C. 1872, 1619.)

C. A. elegans (elegant).* *l.*, segments very narrow, and more drooping than in either of the other varieties; leafstalk green, self-coloured.

C. A. latifolia (broad-leaved). *l.*, segments broader, and not so much subdivided as in the others; each main subdivision being divided into two segments, and these again bear two or three ultimate segments only.

C. A. spectabilis (showy).* *l.*, lower part of the stem puce-coloured, and marked with dark linear oblong spots.

CORYNOSTYLIS (from *koryne*, a club, and *stylos*, a column; alluding to the club-shaped style). SYN. *Calyptrion*. ORD. *Violarieæ*. Elegant climbing stove shrubs. Flowers white, large; petals five, the lower one large,

Corynostylis—*continued.*

drawn out behind into a large hollow pouch, which is compressed on the sides, and constricted in the middle, twisted, many-nerved. Leaves alternate. Increased by seeds; or by cuttings of the young wood, placed in sand, in bottom heat, and under a hand glass.

C. Aubletii (Aublet's). *fl.* white, large, in fascicled racemes. *l.* oblong-ovate, acuminated, serrated. Stem striated, covered with white spots. Guiana, 1823. SYN. *C. Hybanthus.*

C. A. albiflora (white-flowered). *fl.* white, horn or trumpet-shaped, about 2in. long; pedicels long, thread-like. *l.* ovate, acuminate. Para, 1870. Taken in profile, the flowers present the appearance of a long-spurred Tropæolum, while on the front view they bear a resemblance to those of a gigantic Violet.

C. Hybanthus (bent-flowered). A synonym of *C. Aubletii.*

CORYPHA (from *koryphe*, the summit; in reference to the leaves growing in tufts on the top of the trunk). Fan Palm. SYN. *Taliera.* ORD. *Palmeæ.* A small genus of stove palms, with large fan-shaped leaves. Trunks ringed or channelled, unarmed, generally very straight, terminated by a crown of leaves, with prickly petioles. They are of somewhat slow growth, and are best cultivated in a compost of two parts loam, one of peat, and one of sand. Thorough drainage and a liberal supply of water are essentials to success. *See also* **Chamærops, Livistonia,** and **Sabal.**

C. australis (Southern). Synonymous with *Livistonia australis.*

C. Gebanga (Gebang). *l.* fan-shaped, glaucous, divided fully half their length into narrow segments; petioles very stout. *h.* 60ft. Java, 1847. The leaves of this species are largely used by the natives for thatching, making baskets, &c.

C. umbraculifera (umbrella-bearing).* *l.* very large, fan-shaped, plaited, forming a complete circle about 12ft. in diameter; petioles about 6ft. long; edges armed with small brown teeth-like spines. *h.* 100ft. South India and Ceylon, 1742. The famous Talipot Palm, whose magnificent leaves are used in making fans, umbrellas, and many other things.

Other species are: *elata, macropoda, sylvestris,* and *Taliera.*

CORYSANTHES (from *korys*, a helmet, and *anthos*, a flower; flowers helmet-shaped). SYN. *Calcearia.* ORD. *Orchideæ.* A genus of small, but very pretty, greenhouse terrestrial orchids, allied to *Pterostylis*, and requiring a compost of light sandy loam. There are about fifteen species, distributed throughout Australia, New Zealand, and the islands of the Malayan Archipelago, but they are rarely seen in cultivation.

C. limbata (edged). *fl.* purple, white. Autumn. *l.* ovate, cordate, bright green, with reticulated white veins. *h.* 2in. to 3in. Java, 1863. (B. M. 5357.)

C. picta (painted).* *fl.* with a very curious aspect, nearly sessile, bilabiate; the upper and hinder portion fornicato-adscendent, richly stained with deep purple and yellow; the lower lip divided into four long subulate segments, and a similar body, described as a bract, seated at the base of the short ovary. *l.* solitary, cordate, ovate, reticulated. *h.* 3in. or 4in. Java, 1867.

COSCINIUM (from *koskinon*, a little sieve; alluding to the seed being pierced). SYN. *Pereira.* ORD. *Menispermaceæ.* A stove climbing shrub. It requires plenty of room to grow in, or it will not flower well. A compost of light loam and peat suits it well. Cuttings of young growth, taken during summer, will root under a hand glass.

C. fenestratum (window-wood). False Calumba. *fl.* greenish; peduncles umbellulate, several from the same bud. November. *l.* alternate, cordate, entire, five to seven-nerved, smooth and shining above, very hoary underneath. Ceylon, 1820. SYN. *Pereira medica.* (B. M. 4658.)

COSMANTHUS (from *kosmos*, beautiful, and *anthos*, a flower). A small genus of annual herbs, belonging to the natural order *Hydrophyllaceæ*, but now usually included under **Phacelia** (which *see*).

COSMELIA (from *kosmeo*, to adorn; in allusion to the beauty of the flowers). ORD. *Epacrideæ.* An erect much-branched greenhouse evergreen shrub. It requires peat, with a large proportion of silver sand; in fact, the same treatment as **Epacris** (which *see*). Cuttings may be obtained during the summer months.

Cosmelia—*continued.*

C. rubra (red). *fl.*, corolla deep red, tubular, solitary, drooping, terminating the short lateral branches. April and May. *l.* with cucullate bases, half-sheathing. *h.* 3ft. to 6ft. South-west Australia, 1826. (B. R. 1822.)

COSMIBUENA (from Cosimi Buena, a Spanish physician, who wrote a Natural History of Peru). ORD. *Rubiaceæ.* A small genus of handsome stove plants, allied to *Bouvardia, Cinchona, Luculia,* &c. Calyx tube oblong or turbinate; limb tubular or bell-shaped, five to six-toothed; corolla salver-shaped, or funnel-shaped, with an elongated tube, and a five to six-lobed spreading limb. They are of easy culture in a compost of loam, leaf mould, and sand. Propagated by seeds; or by cuttings of ripe wood, placed in sand, under a hand glass, in bottom heat.

C. obtusifolia latifolia (broad obtuse-leaved).* *fl.* white, very fragrant, disposed in terminal cymes; peduncles stout, ¼in. to ⅔in. long; tube 3in. long, somewhat dilated for ½in. at the throat. *l.* opposite, petioled, 3in. to 6in. long, elliptic or rarely more or less ovate or obovate. *h.* 20ft. Columbia, 1876. SYN. *Cascarilla grandifolia.* (B. M. 6239.)

COSMIDIUM. *See* **Thelesperma.**

COSMOS (from *kosmos*, beautiful; in reference to the flowers). ORD. *Compositæ.* Annuals or perennials. Flower-heads solitary; receptacle furnished with linear acute, coloured bracteoles, equalling or excelling the florets. Leaves pinnate. All are readily increased from seed, which may be sown in gentle heat, in early spring. When large enough, the seedlings should be pricked off, and finally planted out in May, similar to other annuals. The perennials require to be protected during winter, and may be propagated like Dahlias, in spring.

FIG. 534. FLOWERING BRANCH OF COSMOS BIPINNATUS.

C. bipinnatus (bipinnate). *fl.-heads* rose or purple, with a yellow disk; peduncles axillary and terminal, leafy, rather short. Late summer. *h.* 2ft. Mexico, 1799. Annual. See Fig. 534.

C. scabiosoides (Scabious like). *fl.* scarlet; outer scales of involucre shorter than the leaves. October. *l.* pinnate-parted, hispid beneath, with two pairs of lanceolate-oblong, sub-serrated leaflets, the terminal one the largest. Stem downy. *h.* 3ft. to 4ft. Mexico, 1834. This species is a half-hardy perennial, with tuberous roots, like the common Dahlia. (B. R. 1838, 15.)

Cosmos—*continued.*

C. tenuifolius (slender-leaved). *fl-heads* rich purple; outer bracts of involucre less acuminate than those of *C. bipinnatus*. Autumn. *l.* very finely cut, almost Fennel-like. *h.* 1ft. to 2ft. Mexico. Annual. (B. R. 2007.)

COSSIGNIA (named after M. Cossigny, a French naturalist, once resident at Pondicherry, who presented Commerson with an herbarium of the plants of Coromandel). ORD. *Sapindaceæ*. An ornamental stove shrub, with impari-pinnate leaves. A compost of two parts loam, and one each of peat and sand, suits the Cossignia. Thorough drainage, and a liberal supply of water, are essential points in its culture. "This plant may be increased by cuttings of the ripe wood, inserted in sand, and plunged in a strong moist heat; we have not, however, found them root very freely" (B. S. Williams).

C. borbonica (Bourbon). A synonym of *C. pinnata*.

C. pinnata (pinnate).* *fl.* white, panicled. *l.* impari-pinnate, with from three to five oblong, entire leaflets, somewhat scabrous above, dark green, with bright orange-yellow veins beneath. *h.* 10ft. to 20ft. Mauritius, 1811. SYN. *C. borbonica*.

COSSUS. *See* **Goat Moth.**

COSTA. The midrib of a leaf; that part which is a direct extension of the petiole, whence the veins arise.

COSTÆ. Any longitudinal elevations.

COSTATE. Ribbed.

COSTMARY, or **ALECOST** (*Tanacetum Balsamita*). A hardy perennial, native of the Orient, but now become naturalised in many parts of South Europe. The leaves were formerly put into ale, and are now sometimes used in salads. The plant has a peculiar odour, and is not much used in this country. Propagation is effected by division of the roots, in early spring or in autumn, planting 2ft. apart, in a dry, warm situation, where they may remain for several years.

COSTUS (an ancient name, adopted from Pliny). SYN. *Tsiana*. ORD. *Scitamineæ*. A genus of about twenty-five species of stove perennial herbs, few of which are in cultivation. Flowers in spikes, with overlapping bracts; tube of corolla funnel-shaped; the outer segments of the limb equal; the innermost, or middle segment—the lip or labellum—large, bell-shaped. Leaves fleshy. Roots tuberous. The species are of simple culture in a compost of sandy loam, to which a little peat is added. Propagated easily by dividing the roots.

C. Afer (Afer). *fl.* white, tinged with yellow. Summer. *l.* ovate-elliptic, narrowly acuminate. *h.* 2ft. Sierra Leone, 1821. (B. M. 4979.)

C. igneus (fiery).* *fl.* bright orange-scarlet. *l.* elliptic, acuminate, glabrous. *h.* 1ft. to 3ft. Bahia, 1882. (I. H. n. s. 511.)

C. Malortieanus (Malortie's).* *fl.* golden-yellow, marked with irregular orange-red bands. *l.* large, obovate, acute, shortly stalked. *h.* 1ft. to 3ft. Costa Rica, 1860. (B. M. 5894.)

C. speciosus (showy). *fl.* white. August. *l.* silky beneath. *h.* 3ft. India, 1799. (P. M. B. 4, 245.)

C. spiralis (spiral). *fl.* scarlet. November. *l.* long-elliptic, thick, shining. *h.* 4ft. Caraccas.

COTONEASTER (from *Cotoneum*, the Quince-tree, and *aster*, like; similar to the Quince-tree). Rose Box. ORD. *Rosaceæ*. A genus of hardy shrubs or small trees. Flowers white or pink, small, solitary, or in axillary or terminal cymes, sometimes polygamous; petals five, imbricate in bud; stamens twenty, inserted at the mouth of the calyx. Leaves simple, coriaceous, quite entire, generally woolly beneath. There are about fifteen species, all of which are excellent for shrubberies and gardens; several are very ornamental when trained against a wall, where their intense scarlet fruits remain very conspicuous throughout the winter. Cotoneasters are of easy cultivation in ordinary garden soil. They may be readily propagated by seed, which should be sown in spring; by cuttings, in autumn; by layers, at the same time; or by grafting on *C. vulgaris* or the common Quince, or on the Hawthorn.

C. acuminata (taper-pointed). *fl.* pink; cymes one to five-flowered, very short. April and May. *fr.* turbinate, scarlet. *l.* ovate, acuminated, or acute, at length glabrous beneath.

Cotoneaster—*continued.*

h. sometimes 14ft. Nepaul, 1820. Deciduous. SYN. *Mespilus acuminata*. (L. B. C. 919.)

C. bacillaris (staff-like). *fl.*, cymes short, many-flowered, puberulous. *l.* oblong or obovate, or oblong-lanceolate, woolly or glabrescent beneath, acute or obtuse, narrowed into the petiole. Nepaul. Hardy deciduous. Much used for walking sticks, hence the specific name.

C. buxifolia (Box-leaved).* *fl.* white, rather large; cymes two to six-flowered, woolly, short. April and May. *l.* elliptic-acute or apiculate-ovate, woolly beneath, evergreen. *h.* 3ft. to 4ft. Nilghiri, &c., 1824.

C. frigida (frigid).* *fl.* white; cymes woolly, very many-flowered. April and May. *l.* oblong or oblong-lanceolate, acute, narrowed to the base, tomentose beneath. *h.* 10ft. Nepaul, 1824. A sub-evergreen shrub or tree. (B. R. 1229.)

C. laxiflora (loose-flowered). *fl.* pink; cymes panicled, pilose; calyces quite smooth. April. *l.* oblong, obtuse at both ends, woolly beneath. *h.* 3ft. to 5ft. 1826. Deciduous. (B. R. 1305.)

C. microphylla (small-leaved).* *fl.* white, usually solitary. April and May. *l.* ovate or obovate, acute, retuse or obtuse, glossy above, pubescent or tomentose beneath. *h.* 3ft. to 4ft. Nepaul, 1824. Evergreen. (B. R. 1114.) "Grafted standard high on the thorn, or any of its congeners," says Loudon, "this shrub forms a singular and beautiful evergreen drooping tree; or it will cover a naked wall nearly as rapidly as Ivy; and it possesses a decided advantage over that plant, in its shoots, which may be prevented from extending many inches from the face of the wall, and, consequently, being not likely to injure the plants growing near it."

C. multiflora (many-flowered). *fl.* white; cymes three to ten-flowered, on short or long, nearly glabrous peduncles. May. *l.* ovate elliptic, or obovate-acute, obtuse or rounded at the tip, glabrous above, glaucous and glabrous or faintly silky beneath. *h.* 4ft. Kashmir, &c., 1837. Deciduous.

C. nummularia (Nummularia-like).* *fl.* white; cymes woolly, very short, two to five-flowered. April and May. *fr.* small, globose, black. *l.* orbicular, or obovate-obtuse, apiculate, white or densely silky-woolly beneath. *h.* 10ft. to 15ft. Kashmir, Western Thibet, &c., 1824. An elegant and distinct sub-evergreen species.

C. rotundifolia (round-leaved). *fl.* white, solitary, sub-sessile. April and May. *l.* orbicular, or orbiculate-obovate, mucronate, glabrous or sparsely hairy above and beneath; pilose beneath. *h.* 3ft. to 4ft. Nepaul, 1825. Evergreen. (Ref. B. 54.)

C. Simonsii (Simons's).* *fl.* solitary or twin, nearly sessile, on short lateral branches. April. *l.* nearly 1in. long, rhombic-orbicular acuminate, glabrous above, sparsely silky beneath. Origin unknown. Evergreen in mild winters. Probably one of the best. (Ref. B. 55.)

C. thymifolia (Thyme-leaved).* *fl.* pinkish, small. April. *l.* small, oblong-ovate, dark shining green above, silvery-white beneath. Temperate Himalayas, 1852. A very pretty evergreen, less than 1ft. high, with congested, crowded, often decurved branches, and scarlet fruits. (Ref. B. 50.)

C. t. congesta (congested). *fl.* white. *l.* palish green, obovate-oblong, thinly glaucous silky beneath. Western Himalayas, 1868. A neat evergreen, forming a compact rounded mass, with rigid, recurved, remarkably congested branches, and globose scarlet fruits. (Ref. B. 51.)

C. vulgaris (common).* *fl.* reddish; cymes lateral, few-flowered. May and June. *fr.* globose, shining red. *l.* broadly elliptic oblong, rounded or acute at the tip, densely pubescent beneath. *h.* 3ft. to 5ft. Europe (Britain), North and West Asia, Himalayas. Deciduous. SYN. *Mespilus Cotoneaster*. (Sy. En. B. 477.) There is also a black-fruited form of this species.

COTTON. *See* **Gossypium.**

COTTON GRASS. *See* **Eriophorum.**

COTTON THISTLE. *See* **Onopordon.**

COTTON-TREE. *See* **Plagianthus.**

COTTON-TREE, SILK. *See* **Bombax.**

COTYLEDON (from *kotyle*, a cavity; in allusion to the cup-like leaves of some of the species). Navelwort. ORD. *Crassulaceæ*. Under this one genus are now included *Echeveria*, *Pachyphytum*, *Pistorinia*, and *Umbilicus*. To render the matter clearer, the typical characters of these four sections are given below. The differences are merely botanical; and the culture of the groups is identical. Greenhouse evergreens, except where otherwise stated.

Cotyledon. Calyx five-parted; corolla gamopetalous, with a five-lobed, spreadingly reflexed limb; stamens ten, adnate at the base to the tube of the corolla; scales oval; carpels five, each drawn out into a subulate style. Fleshy shrubs, from the Cape of Good Hope.

**Echeveria* (including *Pachyphytum*). Calyx five-parted; sepals often foliaceous, erect; corolla urceolate, five-lobed

Cotyledon—*continued.*

or five-partite; lobes often longer than the tube; stamens ten, united to the petals at the base; scales five; carpels five, each ending in a subulate style. Fleshy shrubs or herbs, mostly from Mexico, one from Peru, and another from Japan.

Pistorinia. Calyx short; corolla tube much elongated, cylindrical; stamens inserted in the throat of the corolla; carpels long, linear. Annual erect herbs, natives of Spain and Algiers.

Umbilicus. Calyx five-parted, equal to, or slightly shorter than, corolla tube; corolla tubular or campanulate, five-cleft; lobes acute; stamens ten, inserted in the corolla; scales five; carpels five; styles subulate. Herbs, indigenous to the South of Europe and the Orient.

CULTIVATION. Most of the Cotyledons succeed in well-drained sandy loam, and are readily propagated by seed; this plan being, of course, the only one for the annual species. Many produce a large number of offsets, which afford a certain and rapid method of increase. With those species from which no offsets are developed, and from which few cuttings can be obtained, recourse must be had to the leaves; these should be pulled—not cut—off in autumn, laid on dry sand, in pans, on a shelf, in a propagating or other warm house, and not watered. After some time, small plants form at the ends of the leaves; these should be carefully watered, and, as soon as large enough to handle, placed in small pots, in sandy soil. *C. gibbiflora metallica* is often used in central positions in bedding-out designs, where it is very distinct and effective. This is rather a tender plant, and one which is sometimes difficult to keep in winter; a dry place in a warm house is the best, and during that season but little water should be given. If the leaves are exposed to drip, or the plants are kept too wet at the roots, they are very liable to damp off. *C. secunda glauca* is very extensively used in gardens, either in single or double lines, as edging plants, or for tracing out designs in carpet bedding. It is hardy enough to stand out in a mild winter, but it is always safer to lift the plants in autumn and place them thickly in a frame where excess of moisture can be guarded against, and frost excluded by means of mats or some other covering. This is one of the easiest to increase, as it annually produces large numbers of side growths, which can be removed and grown into good plants in a comparatively short time. *C. fulgens* is a fine greenhouse winter-flowering plant that deserves extended cultivation, as its thick coral-red, wax-like flowers remain a considerable time in full beauty. It is easily grown, and does not require much heat. It can be propagated by the leaves, or by cutting up the plants after they have done flowering. June is a good time to put in the cuttings, which should be kept close in a cool place until they have rooted. Early in September, they may be removed into 5in. pots, in which they will flower. Strong plants will produce three or four panicles of flowers, which open best in a slightly warm, dry atmosphere; they can then be moved into the greenhouse, where they will last a long time. *C. Pachyphytum*, often used as a centre amongst other dwarf-growing bedding plants, should be kept rather dry during winter, in a frame or house free from frost. It is easily increased by the leaves, treated in the way mentioned at the commencement of this paragraph.

C. adunca (hooked). *fl.* yellow, pink. *h.* 2ft. to 4ft. Mexico. SYN. *Pachyphytum roseum.* (Ref. B. 60.)

C. agavoides (Agave-like).* *fl.* dull orange, few, disposed on a slender stem, which is 8in. to 12in. long. *l.* rosulate, ovate, glaucous-green, fleshy, narrowed to a rigid, spiny point. Mexico. Plant stemless. SYN. *Echeveria agavoides.* See Fig. 535. (Ref. B. 67.)

C. atropurpurea (dark purple).* *fl.* bright red, pentagonal, white towards the base; flower-stem erect, terminating in a long raceme. *l.* obovate-spathulate, dark purple, covered with a

Cotyledon—*continued.*

glaucous "bloom," and aggregated into a dense rosette at the top of the stem, which is short, stout, and glaucous. Mexico, 1869. SYN. *Echeveria atropurpurea.* (Ref. B. 198.)

FIG. 535. COTYLEDON AGAVOIDES.

C. cæspitosa (tufted). *fl.* yellow, cymose. July. *l.* rosulate, narrow, tongue-formed, lanceolate, gradually narrowed to an acute point. *h.* 1ft. California, 1796. SYN. *Echeveria cæspitosa.* (Ref. B. 69.)

C. californica (Californian).* *fl.* pale yellow, disposed on lateral flowering stems, which are 1ft. long, bearing short, ovate, amplexicaul leaves, and a bifid or trifid raceme. *l.* rosulate, ligulate, lanceolate, acute, farinosely-glaucous. *h.* 9in. California, 1855. SYN. *Echeveria californica.* (Ref. B. 70.)

C. canaliculata (channelled). *fl.* red. April. *h.* 2ft. Mexico, 1846. SYN. *Echeveria canaliculata.*

FIG. 536. COTYLEDON CHRYSANTHA.

C. chrysantha (golden-flowered). *fl.* white or cream-coloured. *l.* of the dense rosettes shortly oblong-spathulate, obtuse; the cauline ones elliptic acute. *h.* 3in. to 1ft. Orient. A very inappropriate name, given to the plant by its describer before he had seen it in a living state. SYN. *Umbilicus chrysanthus.* See Fig. 536.

C. clavifolia (club-leaved). *fl.* purple; spikes terminal. September. *l.* petiolate, club-formed, incurved, acuminated, and rather

Cotyledon—*continued.*

curled at the apex. *h.* 6in. Cape of Good Hope, 1824. This species is allied to *C. cristata*, but the flowers are about twice the size.

C. coccinea (scarlet).* *fl.* in axillary, elongated, leafy spikes; corolla scarlet on the outside, and yellow on the inside, or paler. October. *l.* spathulately lanceolate. *h.* 1ft. to 2ft. Plant soft, pubescent. SYN. *Echeveria coccinea.* (B. M. 2572.)

C. Cooperi (Cooper's). *fl.* pink. *h.* 6in. South Africa, 1860. (Ref. B. 72.)

C. coruscans (glittering).* *fl.* orange-coloured, pendulous, disposed in umbellate panicles. June. *l.* decussate, aggregate, cuneate-oblong, channelled, with thick margins, apiculated, covered with white mealiness. *h.* 1ft. to 2ft. Cape of Good Hope, 1818. (B. M. 2601.)

C. cristata (crested). *fl.* small, variegated, open in the morning; spikes terminal. September. *l.* petiolate, cuneately-triangular, dotted, curled, and crested at the apex. Stem short. *h.* 6in. Cape of Good Hope, 1820.

C. decipiens (deceiving). *fl.* white. *h.* 6in. Peru, 1868. SYN. *Echeveria decipiens.*

C. decussata (cross-leaved). Synonymous with *C. papillaris.*

C. fascicularis (clustered). *fl.* panicled, pendulous; corolla with a short, greenish, broad, sub-pentagonal tube, and a reddish-revolute limb. July. *l.* scattered, but in fascicles at the tops of the branches, cuneiform, obtuse, flat, thick. Caudex thickened, branched. *h.* 1ft. Cape of Good Hope, 1759. (B. M. 5602.)

C. fulgens (shining).* *fl.* bright coral-red, yellow at the base, disposed in an irregular panicle of nodding racemes. *l.* obovate-spathulate, pale glaucous-green, arranged in a thin rosette. Stem 4in. to 6in. high, throwing out leafy flowering branches, 12in. to 18in. long. Mexico. SYN. *Echeveria fulgens.* (Ref. B. 64.)

C. gibbiflora (gibbous-flowered). *fl.* on short pedicels along the branches of the panicle, which is spreading; petals gibbous at the base, between the lobes of the calyx, straight, acute, white at the base, and rather scarlet at the apex. July. *l.* flat, cuneiform, acutely mucronate, crowded at the tops of the branches. *h.* 1ft. to 2ft. Mexico, 1826. SYN. *Echeveria gibbiflora.*

C. g. metallica (metallic).* *fl.* yellowish, tipped with red, thirty to sixty in a loose thyrsoid panicle, which is borne on a longish stem. *l.* broad, obovate-spathulate, about 6in. across, and rather more in length, of a beautiful purplish-glaucous metallic hue. Mexico. SYN. *C. metallica.* (Ref. B. 65.) Of this very extensively-cultivated plant there are numerous forms.

C. glaber (smooth). *fl.* yellowish; floral stem 6in. high, cymose-paniculate. *l.* rosulate, spathulate-elliptic. Turkestan, 1880. Hardy. SYN. *Umbilicus glaber.*

C. glauca (glaucous). *fl.* scarlet, tipped with yellow, twelve to twenty in a secund raceme, the stems of which are slender and pinkish. *l.* in a dense rosette, obovate-cuneate, mucronate, and farinosely glaucous. *h.* 6in. Mexico. SYN. *Echeveria glauca.* (Ref. B. 61.)

C. grandiflora (large-flowered).* *fl.* in spicate panicles; corolla of a reddish-orange colour, with a tinge of purple. October. *l.* orbicularly cuneated, all white or glaucous; lower ones rosulate. *h.* 1ft. to 2ft. Mexico, 1828. SYN. *Echeveria grandiflora.*

C. hemisphærica (hemispherical). *fl.* with a green tube, and the limb variegated with white and purple; small, nearly sessile, erect, along an elongated peduncle. July. *l.* scattered, ovate-roundish, thick, dotted, glabrous. *h.* 1ft. Cape of Good Hope, 1731.

C. linguæfolia (tongue-leaved). *fl.* yellowish. *h.* 1ft. Mexico. SYN. *Echeveria linguæfolia.* (Ref. B. 58.)

C. lurida (lurid). *fl.* disposed in racemose spikes; corolla same as in *C. grandiflora*, but more scarlet. July. *l.*, lower ones lanceolate-cuneated, of a livid colour; superior ones lanceolate. *h.* 1ft. Mexico, 1830. Plant rather tufted. SYN. *Echeveria lurida.* (Ref. B. 59.)

C. maculata (spotted). *fl.* in a lax simple raceme; tube of corolla green, sub-ventricose, with the segments of the limb acute, rose-pink; throat white, slightly spotted. July. *l.* scattered, ovate-spathulate, somewhat auricled at the base, fleshy, shining, marked with dark-red spots on both surfaces. *h.* 1ft. Cape of Good Hope, 1816. (Ref. B. 35.)

C. metallica (metallic). A synonym of *C. gibbiflora metallica.*

C. orbiculata (round). *fl.* reddish, panicled. July. *l.* opposite, flat, obovately-spathulate, obtuse, with an acumen, glaucous and mealy, margined with red. *h.* 2ft. to 4ft. Cape of Good Hope, 1690. (R. H. 1857, 347.) The following varieties belong to this species: *elata*, *oblonga*, *obovata*, *ramosa*, and *rotundifolia.*

C. Pachyphytum (thick-plant).* *fl.* red. *h.* 1ft. Mexico. SYN. *Pachyphytum bracteosum.*

C. papillaris (pimpled). *fl.* in panicles; corolla with a somewhat pentagonal tube, and oblong acute reflexed lobes. August. *l.* opposite, terete-ovate, fleshy, glabrous, acute, erect. *h.* 1ft. to 2ft. Cape of Good Hope, 1819. SYN. *C. decussata.* (B. R. 915.)

C. Peacockii (Peacock's).* *fl.*, corolla bright red, under ½in. long; spike scorpioid, 1ft. long; upper flowers close, the lower ones distant. July. *l.* in a close rosette, obovate-spathulate, about 2in. to 2½in. long, and 1½in. broad. Stem lateral, slender, terete, reddish-brown. *h.* 1ft. Mexico, 1874. SYN. *Echeveria Peacockii.*

Cotyledon—*continued.*

C. Pestalozzæ (Pestalozza's).* *fl.* pale rose, sub-secund; panicle glandulously hairy, panicled. *l.*, radical ones spathulate-obtuse, margin obsoletely denticulated; cauline ones obovate-oblong. Cilicia, 1877. SYN. *Umbilicus Pestalozzæ.* (G. C. n. s., viii. 457.)

C. platyphylla (broad-leaved). *fl.* white, cymose-corymbose. *l.*, radical ones rosulate, ovate-spathulate, obtuse, or sub-acute, minutely papillose-hairy. *h.* 9in. Altai, 1880. Hardy. SYN. *Umbilicus platyphyllus.*

C. racemosa (racemose).* *fl.* scarlet, alternate, erect, on short pedicels, very closely resembling those of *C. coccinea*, but the sepals are shorter and mucronate, and the petals are narrower; racemes spike-formed and elongated. October. *l.*, radical ones thickish, elliptic, acute, awnless, rosulate. Plant quite glabrous. *h.* 2ft. Mexico, 1836. SYN. *Echeveria racemosa.*

C. ramosissima (much-branched). *fl.* with a pale green tube, and a pinkish spreading limb, solitary at the tips of the branchlets, drooping, 1¼in. long. September. *l.* crowded, opposite, ⅓in. to 1in. long, orbicular, obovate, sub-acute or cuspidate, concave, densely fleshy. *h.* 1ft. to 3ft. South Africa. A bushy, succulent, much-branched, erect shrub. (B. M. 6417.)

C. retusa (blunt).* *fl.* yellowish; petals keeled, gibbous at the base; branches few-flowered; panicle dense, sub-corymbose. *l.* obovate-spathulate; old ones retuse, glaucous, crenulated; cauline ones linear-oblong, quite entire. *h.* 1½ft. Mexico, 1846. SYN. *Echeveria retusa.* The varieties *glauca* and *floribunda splendens* are among the best of flowering varieties.

C. rosea (rosy). *fl.*, calyx rose-coloured; corolla yellow; lower bracts triquetrous; spike cylindrical, dense. April. *l.* oval-acute, sometimes rosulate, sometimes imbricated. Plant caulescent. *h.* 1ft. Mexico, 1840. SYN. *Echeveria rosea.*

C. Salzmanni (Salzmann's). *fl.*, corollas brilliant golden, tips of the spreading lobes red; disposed in a broad compoundly corymbose head. July. *l.* fleshy, terete, covered with short red streaks. Stem stout, ascending, leafy. Tangiers, 1869. SYN. *Pistorinia Salzmanni.* (B. M. 5801.)

C. Scheerii (Scheer's). *fl.* creamy-yellow; racemes nutant. October. *l.* ovate-acute, lengthened into the flat petioles. *h.* 1½ft. Mexico, 1841. Plant caulescent. SYN. *Echeveria Scheerii.*

C. secunda (secund). *fl.* reddish-yellow, on long peduncles; racemes secund, recurved. June to August. *l.* rosulate, crowded, cuneate, mucronate, glaucous. *h.* 1ft. Mexico, 1837. This is one of the best for general purposes, and is most extensively grown. SYN. *Echeveria secunda.* It has numerous varieties. The best are: *glauca*, with bluish-white leaves; *glauca major*, a large form of the first-named variety, having leaves not quite so light-coloured; and *ramosa*, a monstrosity in habit of growth—stem flat, broad, and covered at the top with numerous small green abortive leaves, in appearance resembling the inflorescence of a Cockscomb.

FIG. 537. COTYLEDON SEMPERVIVUM.

Cotyledon—*continued.*

C. Sempervivum (House Leek).* *fl.* deep red; peduncles many-flowered. August and September. *l.* rosulate, ovate, sub-acute, dull green, tinged with brown. *h.* 4in. to 6in. Hardy. SYN. *Umbilicus Sempervivum.* See Fig. 537.

C. serrata (saw-like). *fl.* variegated with white and red; peduncles two to three-flowered. June. *l.* oblong, cartilaginously-crenated. Stem sub-spicate. *h.* 6in. Candia, 1732. Hardy. (S. F. G. 444.)

C. spinosa (spiny).* *fl.* yellow, five-parted, on short pedicels, collected into a cylindrical spike. June. *l.* oblong, pointed by a spine at the apex, quite entire; radical ones rosulate, spathulate, convex beneath towards the apex; cauline ones lanceolate, flat. Stem spicate, very simple. *h.* 1ft. Siberia, China, &c., 1810. Hardy. Often called in gardens *Sempervivum spinosum.*

C. teretifolia (terete-leaved). *fl.* yellow. July. *h.* 1½ft. South Africa, 1862.

C. tricuspidata (three-spined). This species is close to *C. papillaris*, but differs in the leaves being tricuspidate. *h.* 1ft. Cape of Good Hope, 1823.

C. tuberculosa (knotted). *fl.* showy, orange-coloured, tubular, 1in. or more long, sub-panicled, erect; limb spreading. June. *l.* scattered, sub-cylindrical, linear-oblong, acute. *h.* 1ft. Cape of Good Hope, 1820.

C. turkestanica (Turkestan). *fl.* white, with purple stripes outside, cymose; floral stem 2in. to 6in. high. *l.*, radical ones in a dense rosette, flat, oblong-lanceolate or spathulate-ovate acute, puberulous, ciliate. *h.* 9in. Turkestan, 1880. Hardy.

C. Umbilicus (Navelwort).* Penny Leaf; Penny Pies; Penny wort. *fl.* yellow, erect; corolla hardly five-cleft to the middle. June. *l.*, lower ones peltate, densely crenated, roundish; bracts a little toothed. *h.* 6in. Britain. Hardy. (Sy. En. B. 539.)

C. velutina (velvety).* *fl.* yellow, green at the base, and margined with red, pendulous; scape erect, with a flat-headed sub-corymbose panicle. *l.* large, opposite, oblong-ovate, fleshy, velvety when young, and somewhat glaucous when old. *h.* 2ft. to 3ft. South Africa, about 1840. (B. M. 5684.)

COTYLEDONS. The rudimentary leaves of the embryo; commonly called Seed Leaves.

COULTERIA (named after Thomas Coulter, M.D., author of a Monograph on the Natural Order *Dipsaceæ*). This is now regarded as a mere section of the large genus *Cæsalpinia.* Stove evergreen shrubs, with spines in the axils of the abruptly pinnate leaves. Flowers yellow, disposed in racemes; pedicels articulated, under the flower. For culture, *see* **Cæsalpinia.** *C. horrida* and *C. tinctoria* are the only two species which have been introduced into this country, and probably these are only seen in botanic gardens.

COUROUPITA (native name). A small genus, containing four species of trees belonging to the TRIBE *Lecythideæ* of ORD. *Myrtaceæ.* The clusters of flowers spring from the trunks and branches. Leaves alternate, entire or obscurely crenate; stipules lanceolate, deciduous. All are natives of tropical America; none are met with in cultivation, except in botanic gardens. The best-known is *C. guianensis* (the Cannon-ball tree), the cup-like fruit shells serving various purposes.

COURSETIA (named after Dumont de Courset, 1746-1824, author of "Le Botaniste Cultivateur," five vols., 8vo, Paris, 1802; and co-editor of the "Bon Jardinière"). ORD. *Leguminosæ.* A genus of stove evergreen tomentose shrubs. Flowers bluish, in axillary racemes. Leaves abruptly pinnate, with many pairs of small ovate leaflets; the common petiole sometimes terminating in a bristle, but rarely in an odd leaflet; stipules setaceous. They thrive well in a compost of loam and peat, well drained. Cuttings of firm young shoots will root in sand, during the early part of summer, if placed in a mild bottom heat and covered with a bell glass. There are about ten species, all natives of the warmer parts of the New World.

COUSINIA (named after M. Cousin, a French botanist). ORD. *Compositæ.* Hardy biennials and perennials, rarely annuals. The only European member of the genus is *C. wolgensis*, a native of Southern Russia. More than a hundred species of *Cousinia* have been described, all of them, with the exception just named, being Asiatic. They are all of the easiest culture. *C. hystrix* is probably the

Cousinia—*continued.*

only one now grown. This may be increased by dividing the roots in spring; or from seed, sown in a cold frame.

C. hystrix (bristly). *fl.-heads* purplish, disposed in solitary, somewhat globose, woolly heads. June. *l.* pinnatifid, or pinnate, with spiny teeth, covered on both surfaces with a cobweb-like down. Stem branching at top. *h.* 2ft. Orient, 1838. Hardy herbaceous biennial.

COUTAREA (the native name in Guiana). ORD. *Rubiaceæ.* A small genus of stove evergreen trees, from tropical America. Some of the species are believed to furnish the Cinchona bark of French Guiana. They are of easy culture in a compost of loam, sand, and peat. Cuttings will root readily in the same kind of soil, under a hand glass, in heat.

C. speciosa (showy).* *fl.*, corolla purple, large, broad, funnel-shaped; peduncles trifid, three-flowered. *l.* ovate, acuminated, on very short petioles, glabrous; stipules broad, short, acute. *h.* 25ft. Guiana, 1803.

COUTOUBEA (Caribbean name of one of the species). SYN. *Picria.* ORD. *Gentianaceæ.* A small genus of erect stove herbs. Flowers white or purplish, disposed in terminal and lateral spikes or racemes, dense or loose, bracteate; corolla salver-shaped, with an equal cylindrical tube, or naked throat, and a four-parted limb. Leaves opposite, rarely whorled, decussate, sessile, or amplexicaul, one-nerved, thinnish, veined. Stems obscurely tetragonal, usually branched; branches opposite, and thickened at the roots. All are of the easiest culture, requiring the same treatment as other tender annuals.

C. ramosa (branching). *fl.* white, decussate, remote; spikes terminal, axillary, the lower part leafy. June. *l.* oblong-lanceolate, acuminate at both ends. Stems divaricately branched. *h.* 1ft. to 2ft. Guiana, 1824.

C. spicata (spicate). *fl.* decussate, rather close together; corolla white, reddish in the throat; spikes terminal, elongated, loose. July. *l.* lanceolate, acuminated at both ends. Stem erect, branched. *h.* 2ft. to 3ft. Guiana, 1823.

COWAGE. *See* **Mucuna.**

COWANIA (in honour of James Cowan, a London merchant, who several times visited Mexico and Peru, whence he introduced a great many plants). ORD. *Rosaceæ.* A genus of very ornamental greenhouse evergreen shrubs, natives of Mexico and the adjacent interior region northward. They are extremely difficult to propagate. Perhaps the only one of the three species yet introduced is *C. plicata.* It requires a sandy peat and loam soil.

C. ericæfolia (Heath-leaved). *fl.* white, smaller. *l.* linear, entire. Found only by Parry, on the Rio Grande.

C. mexicana (Mexican).* *fl.* yellow. *l.* cuneate-obovate, pinnately three to seven-lobed, dark green above, tomentose beneath. *h.* 1ft. to 6ft. Mountains of California to Mexico.

C. plicata (plaited).* *fl.* dark red, terminal, solitary, almost sessile; when protruding from the bud, exactly like those of *Rosa.* June and July. *l.* simple, alternate, wedge-shaped, oblong, pinnatifid, plaited. *h.* 1ft. to 2ft. Mexico, 1835. A rigid, decumbent, much-branched shrub. (S. B. F. G. 400.)

COW BERRY. *See* **Vaccinium Vitis-Idæa.**

COWDUNG. For potting purposes, this is highly valued. It should be collected and stored in a shed, where it can be frequently turned, and allowed to remain until nearly dry before being used. For manure water, fresh Cowdung may be employed, if plenty of clear water is added.

COW GRASS. *See* **Trifolium medium.**

COWHAGE. *See* **Mucuna.**

COWHAGE CHERRY. *See* **Malpighia urens.**

COW ITCH. *See* **Mucuna.**

COW-ITCH CHERRY. *See* **Malpighia urens.**

COW PARSLEY and **COW PARSNIP.** *See* **Heracleum.**

COWSLIP. *See* **Primula veris.**

COW-TREE. *See* **Galactodendron.**

COW WHEAT. *See* **Melampyrum.**

CRAB APPLE. *See* **Pyrus Malus.**

CRAMBE (name deduced from the Greek). Sea-kale. ORD. *Cruciferæ*. Hardy herbaceous perennials. Flowers white, with a honey-like perfume; racemes elongated, many-flowered, disposed in lax panicles; pedicels filiform, erect, bractless. Leaves sometimes thick, sometimes membranous, hairy or smooth; cauline ones alternate, stalked, pinnately toothed, cut, pinnatifid or lyrate. They are of easy growth in any good garden soil, and may be increased either by dividing the roots, or by seed. For special culture of *C. maritima*, see **Sea-kale.**

C. cordifolia (heart-leaved).* *fl.* white, disposed in leafless, smooth, and much-branched panicles. June. *l.* stalked, toothed; lower ones cordate, upper ones ovate, and are, as well as the stem, almost glabrous. *h.* 6ft. North Caucasus. This is a hardy large-leaved herbaceous plant.

C. juncea (rush-like). *fl.* whitish. May to June. *l.* lyrate, with toothed lobes; terminal lobe the largest; leafstalk and stem hispid from reflexed hairs. *h.* 2ft. Iberia, 1820.

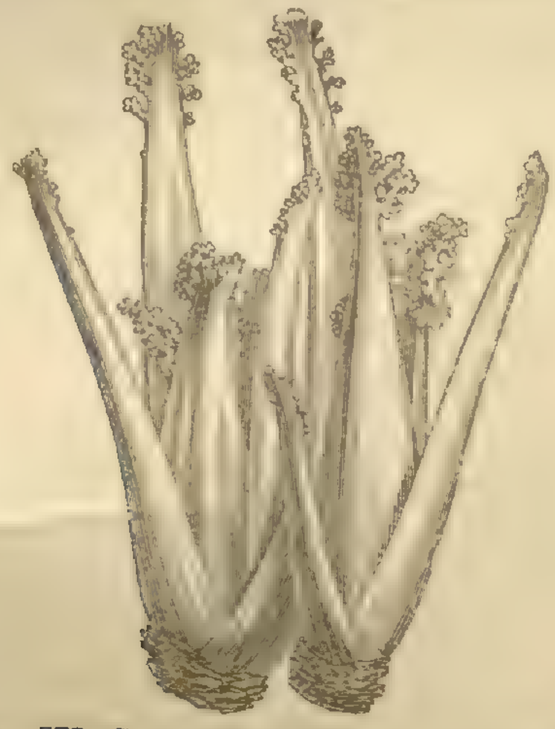

FIG. 538. SEA-KALE (CRAMBE MARITIMA).

C. maritima (sea). Common Sea-kale. *fl.* white. May. *l.* roundish, sinuate, waved, toothed, and, as well as the stem, very smooth. *h.* 1½ft. Britain, &c. See Fig. 538. (Sy. En. B. 80.)

C. tartarica (Tartarian). *fl.* white. June and July. *l.*, radical ones decompound; leaflets cut-toothed; younger leaves rough; adult ones smooth, as well as the stem. Root fusiform, 2ft. to 3ft. long. *h.* 2ft. to 3ft. Eastern Europe, 1789.

CRANBERRY. *See* **Oxycoccus palustris.**

CRANE FLY, or DADDY LONG LEGS (*Tipula maculosa* and *T. oleracea*). These insects belong to a large family of the Diptera, or two-winged insects, called *Tipulidæ*, in which the proboscis is very short and imperfectly developed. The larvæ generally prefer wet soil, and are killed when deprived of moisture; while many are wholly aquatic. As an example of Crane Flies in general, one of the commonest and most destructive species, namely *Tipula*

FIG. 539. CRANE FLY (TIPULA OLERACEA).

oleracea (see Fig. 539), is here briefly described. This insect is rather large, the male being nearly ¾in. long, and 1½in. across the wings; while the female measures nearly 1in. in length, and 2in. across the expanded wings. The colour is tawny, but the fly has the appearance of being covered with dust. The wings are smoke-coloured, and somewhat longer than the body. The balancers, behind the wings, are broad at the tip. The head is small, and

Crane Fly, or Daddy Long Legs—*continued.*

bears a pair of hemispherical black eyes, and the short, slender, thirteen-jointed antennæ. The thorax is of a tawny hue, large, and oval, considerably higher than the head, long, and composed of three segments. The female is distinguished from the male in having the end of the body long and spindle-shaped, instead of clubbed, as in the male. The grubs of this fly are of a dark grey colour, and measure, when full grown, about 1½in. in length, and ⅛in. in diameter. They have no legs, but have a pair of powerful jaws, and the tail is tubercled. Their skin is exceedingly tough; hence, they are called "Leather Jackets." These grubs are very destructive to lawns, in sheltered, dry places, and also to Cabbages and other cruciferous plants. No perfect means of extermination has yet been discovered, and the only two remedies of any service in materially reducing the quantity of either grubs or flies, are as follows:

Traps. These consist of slices of potato, turnip, wurzel, or apple, affixed to sticks, and sunk a few inches underground. They must be pulled up every other day, and the grubs, which will be found firmly attached to them, removed and destroyed.

Rolling. On lawns, so soon as the flies are visible, rolling with a heavy roller each evening will destroy very many.

A top-dressing of guano has also been found of use.

Fowls, starlings, and rooks will devour large numbers of the flies, and are therefore useful. It has usually been found that the grubs were not affected by any preparation which did not, at the same time either injure or destroy the plants.

CRANE'S BILL. *See* **Geranium.**

CRASPEDARIA. *See* **Polypodium.**

CRASSULA (diminutive of *crassus*, thick; alluding to the leaves and stems). Including *Rochea*, *Septas* (of Linnæus), and *Turgosea*. ORD. *Crassulaceæ*. A genus of about 120 species of greenhouse fleshy shrubs or herbs, nearly all natives of the Cape of Good Hope, a few being Abyssinian and Himalayan. Calyx five-parted; lobes erect or spreading, much shorter than the petals; petals five, erect or spreading, free or connate at the base; stamens five; filaments shorter than the petals; scales five, varying in shape. Sometimes, though rarely, the parts of the flower, instead of being in fives, as described above, are in sixes and nines. Crassulas are very ornamental plants, with a grotesque appearance. They thrive in a mixture of sandy loam and brick rubbish, in well-drained pots. Propagated by cuttings, which should be taken off and laid for two or three days in the sun, to dry. All the species mentioned below are from South Africa.

C. acutifolia (acute-leaved). *fl.* white; cymes small, pedunculate. September. *l.* opposite, fleshy, terete, subulate, spreading, glabrous. Stem suffruticose, decumbent, branched, terete. 1795.

C. alpestris (alpine). *fl.* white; cymes terminal, few-flowered, corymbose. *l.* fleshy, connate, shortly cultrate, sub-acute, keeled, glabrous. Stem suffruticose, short, branched, with short internodes, nearly glabrous. *h.* 3in. to 4in. 1878.

C. arborescens (woody).* *fl.* rose-coloured, large; cymes panicled, trichotomous. May. *l.* opposite, roundish, mucronulate, fleshy, flat, glaucous, dotted above, glabrous. Stem shrubby, erect, terete. *h.* 2ft. to 3ft. 1739. SYN. *C. Cotyledon.* (B. M. 384.)

C. bibracteata (two-bracteate). *fl.* white; anthers sulphur-coloured. August and September. *l.* subulate, expanded, flat or furrowed above; bracts two on each peduncle. Plant effuse, shrubby, decumbent, rooting. *h.* 6in. 1823.

C. Bolusii (Bolus's).* *fl.* pale flesh-colour. Summer. *l.* elliptic, lanceolate, fleshy, pale green, with dark, almost black, blotches. *h.* 3in. to 5in. 1875. Perennial herb. (B. M. 6194.)

C. ciliata (ciliated).* *fl.* cream-coloured; corymbs terminal. July. *l.* oval, obtuse, flattish, distinct, ciliated; cilia white, cartilaginous, usually retrograde. Stem suffruticose, sparingly branched. *h.* 6in. 1732.

C. coccinea (scarlet).* *fl.* scarlet; tube 1in. long. June to August. *l.* ovate-oblong, acutish, connate, and sheathing at the base. *h.* 1ft. to 3ft. Table Mountain, 1710. Shrub. SYN. *Kalosanthes coccinea.* See Fig. 540. (B. M. 495.)

C. Cooperi (Cooper's).* *fl.* white, numerous, small. Winter. *l.* oblong lanceolate. Habit neat, trailing. 1862. (R. G. 786.)

C. cordata (heart-shaped). *fl.* reddish; cymes panicle-formed. May. *l.* opposite, petiolate, cordate, obtuse, quite entire, dotted above, glabrous. Stem shrubby. *h.* 1ft. to 3ft.

Crassula—*continued.*

C. Cotyledon (Cotyledon-like). A synonym of *C. arborescens.*

C. ericoides (Heath-like).* *fl.* snow-white, small, five to ten disposed in an umbellate cyme. [illegible]. *l.* three to four lines long, ovate-oblong, flat, [illegible] in four rows. Branchlets distant. *h.* 6in. 1820. Plant shrubby, between erect and [illegible]. Described as an elegant species.

C. falcata ([illegible]).* *fl.* bright crimson, rarely white, with [illegible] terminal [illegible]. *h.* 3ft. to 6ft. [illegible]. (B. M. [illegible].)

C. glomerata ([illegible]). *fl.* white, solitary in the forks of the [illegible]. *l.* opposite, linear-lanceolate. Stems scabrous, dichotomous. *h.* 3in. to 4in. 1774. Annual.

C. imbricata (imbricated). A synonym of *C. lycopodioides.*

C. jasminea ([illegible]).* *fl.* white at first, but becoming reddish [illegible], very like those of the common Jasmine, [illegible] longer than the calyx. April, May. *l.* [illegible]. A beautiful plant, largely grown near London for [illegible]. SYNS. *Rochea jasminea* and *Kalosanthes jasminea.* (B. M. [illegible].)

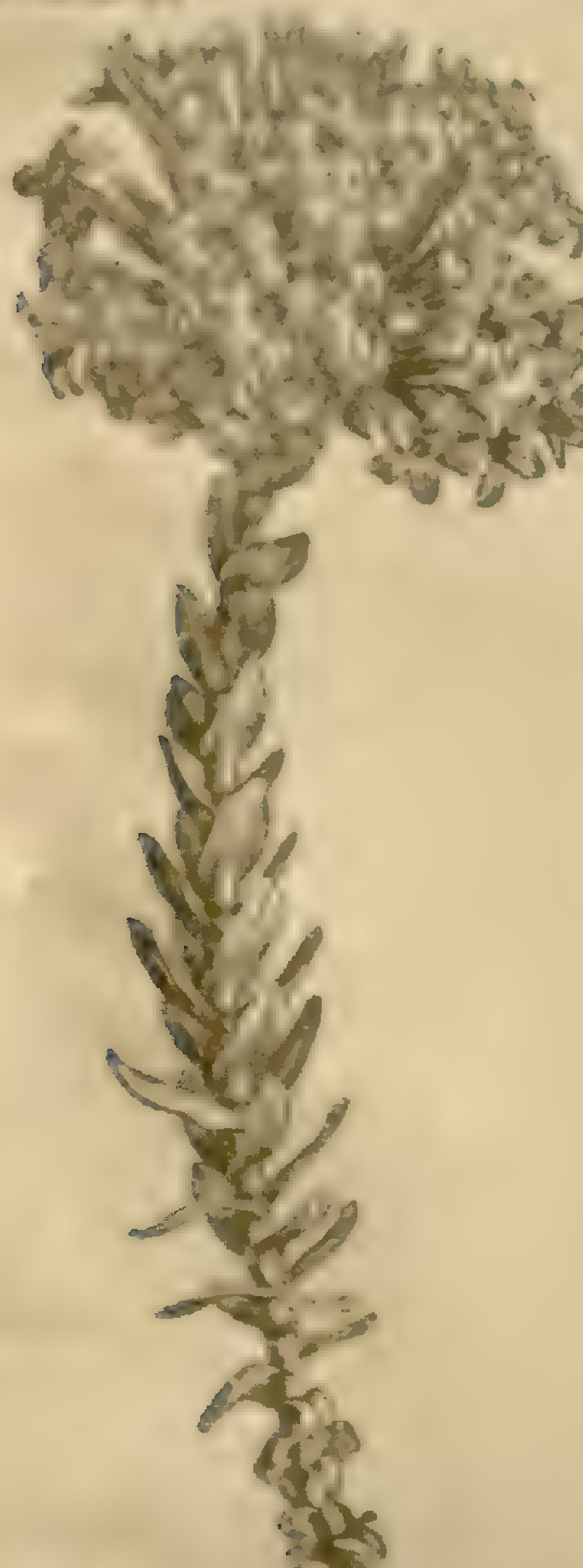

FIG. 540. CRASSULA COCCINEA.

C. lactea (milky white).* *fl.* snow white, stellately spreading; [illegible], many-flowered, [illegible]. Winter. *l.* ovate, attenuated at the base, and connate, glabrous, dotted within the margin. Stem shrubby, terete, branched, twisted below. *h.* 1ft. to 2ft. 1774. (B. M. [illegible].) There is a form of this with [illegible] variegated leaves. Both type and variety are excellent winter-flowering plants.

C. lycopodioides (Lycopodium-like). *fl.* axillary, sessile, bracteate; corolla purple at the base, small. *l.* decussate, ovate, [illegible], imbricating in four rows. Stem shrubby, branched, covered with leaves on all sides. SYN. *C. imbricata.*

C. marginalis ([illegible]).* *fl.* white, disposed in umbellate [illegible]. July. *l.* perfoliate, roundish-ovate, ending in a [illegible] mucro, flat, spreading, reddish beneath, quite entire, [illegible] margins, which are at first reddish, but at length become white. Stem herbaceous, glabrous, pellucid, creeping. 1774. SYN. *C. profusa.* (B. M. [illegible].)

C. perfoliata (perfoliate). *fl.* scarlet, disposed in large, terminal corymbs. July, August. *l.* [illegible], lanceolate, acuminated, [illegible] convex beneath, of a greenish glaucous [illegible]. *h.* [illegible] to [illegible]. [illegible]. Shrub. SYN. *Rochea perfoliata.* (A. B. R. [illegible].)

C. profusa (profuse). A synonym of *C. marginalis.*

Crassula—*continued.*

C. pyramidalis (pyramidal). *fl.* whitish, small, inconspicuous. *l.* four-ranked, very densely imbricate. South Africa. Herbaceous. A very curious plant, from its habit. (G. C. 1872, 289.)

C. quadrifida (four-cut). *fl.* white, tinged with red, panicled, tetramerous. Summer. *l.* oblong-spathulate; upper ones rounder, decussate. 1872. Perennial. (Ref. B. 298.)

C. rosularis (rosulate).* *fl.* white, in opposite, pedunculate clusters. July. *l.* radical, obtuse, minutely ciliated, flat, rosulate. *h.* 6in. 1819. Herbaceous.

C. rubicunda (rubicund). *fl.* crimson, in terminal dichotomous cymes, 6in. to 1ft. across. *l.* in opposite pairs, clasping the stem and broadly connate at the base, lanceolate, green, reflexed, narrowed gradually to a point, minutely ciliated; lower ones 6in. to 8in. long; upper ones gradually laxer and smaller. *h.* 1ft. to 3ft. (Ref. B. 339.)

C. Saxifraga (Saxifraga-like). *fl.* flesh-coloured, on slender, terminal scapes. June. *l.* orbicular or sub-reniform, fleshy, 2in. to 3in. across, red beneath. *h.* 4in. 1873. (B. M. 6068.)

C. spathulata (spathulate). *fl.* rose-coloured; cymes pedunculate, paniculate. July. *l.* opposite, petiolate, roundish, crenated, glabrous, shining above. Stems suffruticose, decumbent, branched. 1774. (L. B. C. 359, under the name of *C. cordata.*)

C. tetragona (four-angled). *fl.* white, small, nearly urceolate, disposed in a pedunculate fastigiate cyme. August. *l.* decussate, sub-connate, depressed above, subulate, somewhat tetragonal, incurved, spreading, glabrous. Stem erect, shrubby, terete, somewhat rooting. *h.* 2ft. 1711.

C. versicolor (changeable).* *fl.* in umbels at the extremities of the branches, sweet-scented in the evening; corolla hypocrateriform, with a long tube; limb shorter than the tube, five-cleft, segments somewhat recurved, bright red on the outside, and white within, except a red margin, which gradually extends over the whole. Summer. *l.* imbricate, lanceolate, hollowed, especially towards the base, connate, sheathing, edged with minute ciliæ. Stem shrubby, erect, branched. SYNS. *Rochea versicolor* and *Kalosanthes versicolor.* (B. M. 2356.)

CRASSULACEÆ. An extensive order of usually succulent herbs or shrubs. Flowers in terminal or axillary cymes, bracteate or not clustered, often secund; petals three to five, rarely ten to twelve or more, separate or united, imbricate in bud. Leaves alternate or opposite, exstipulate, often crowded in rosettes at the extremities of the branches. There are about fourteen genera, including *Bryophyllum*, *Crassula*, *Sedum*, and *Sempervivum*, and about 400 species.

CRATÆGUS (from *kratos*, strength; in reference to the hardness and strength of the wood). Hawthorn. ORD. *Rosaceæ.* Hardy shrubs or small trees, often spiny. Flowers mostly white, in terminal corymbose cymes; bracts subulate, deciduous. Fruit ovoid or globose, with a bony one to five-celled stone, or with five bony one (rarely two) seeded stones. Leaves simple, lobed, or pinnatifid. There are about fifty species, all of which are confined to North temperate regions. In the New World, the home of the majority of the species, the genus extends into New Grenada. Few hardy shrubs are more useful and ornamental than the Hawthorn. It makes, perhaps, a better hedge than any other shrub, as it grows quickly, and will generally thrive in most soils. When preparing plants for this purpose, the fruits, or "haws," should be gathered in October, and laid in a heap to rot, being at first spread rather thinly, to prevent heating. They should then be mixed with about one-third their bulk of either fine sifted soil or sand, and be overlaid with a covering of soil, from 4in. to 6in. in thickness. Here they may remain till the time of sowing—in October of the following year—though some cultivators prefer to sow in spring, in order to avoid the depredations of mice, &c. The ground should be previously well dug and cleaned. The seed may be sown in drills, 1½in. deep, and 12in. from each other. They should be evenly spread in the furrows, at the rate of half a bushel of mixed seed and sand to forty yards of furrow, and then covered by means of a rake. The surface should, however, be left a little rough, so as to break the effects of rain, which is apt to cause it to cake, when made very fine. So soon as the seedlings show themselves above ground, the hoe should be passed between the rows, to loosen the earth and clear it of weeds. With good management, a bushel of seed will produce about 4000 plants

Cratægus—*continued.*

The majority of nurserymen never follow the plan above described, but simply sow the seed in beds from 3ft. to 4ft. wide, leaving alleys about 1ft. in width, to allow the beds to be weeded by hand or watered. The largest seedlings are removed for transplantation at the end of the first year. A succession of seedlings will often be furnished by an ordinary seed-bed for about three years. When the time comes round for transplanting, in October, the young plants should be lifted, by first loosening the earth with a spade on each side of the row, and the strongest drawn out. The small ones remaining should stand for another year after the soil is again trodden down. Transplanting is best performed by cutting out a perpendicular trench [illegible] deep, in which plants are placed singly [illegible], the roots being previously shortened with a sharp knife, to make them grow bushy. The soil should then be trodden firmly about them. The plants should be allowed to stand in these drills for two years, or even three, before being permanently placed out. Such is the plan pursued by those who require a large number of plants; but, for general purposes, it is best to purchase the "quicks" of nurserymen, whose special business it is to rear them. The different varieties to be increased must be grafted or budded. The rules for both these methods are very similar to those laid down for other trees or shrubs. See **Budding** and **Grafting**. When in a young state, Hawthorns, especially the double pink and white varieties, make very desirable pot plants, and will bear a [illegible] amount of forcing. By this means, they serve as excellent early spring ornaments for decorative purposes. The pyramid or standard form is most suitable and pleasing for pot plants.

C. apiifolia (Apium-leaved). *fl.* white; pedicels of the corymb [illegible] as well as the [illegible] tube of the calyx [illegible]. May and June. *fr.* deep red, [illegible]. *l.* [illegible]; lobes acute, deeply toothed. *h.* [illegible]. United States, [illegible].

C. Aronia [illegible]. See **C. maura.**

C. Azarolus (Azarole). *fl.* white, sweet-scented. May. *fr.* red or yellow, [illegible], with a very agreeable taste when fully ripe. *l.* [illegible], cuneated at the base, [illegible]; lobes [illegible] coarsely few-toothed. Branches, corymbs, and calyces [illegible]. *h.* 15ft. to 20ft. South Europe, Levant, &c., 1640. (B. R. [illegible].)

C. caroliniana (Carolinian). A synonym of *C. flava.*

C. carpatica (Carpathian). A synonym of *C. nigra.*

C. coccinea (scarlet). *fl.* white; [illegible]. May. *fr.* bright [illegible] [illegible]. *h.* [illegible]. United States, [illegible]. ([illegible].) A large number of varieties of this species may be raised from seed. The following are those generally known: [illegible] [illegible] (Neapolitan), [illegible].

C. cordata (heart-shaped). Washington Thorn. *fl.* white. May and June. *fr.* red, very small, depressed globose. *l.* [illegible] at the base. *h.* [illegible]. United States, 1738. SYN. *C. populifolia.* (B. R. [illegible].)

C. Crus-galli. Cockspur Thorn. *fl.* white, tinged with red; anthers red. May. *fr.* scarlet, edible. *l.* obovate-cuneiform, [illegible] shining, glabrous, falling off late in the autumn; [illegible]. Spines very long. *h.* [illegible]. North America, [illegible]. SYN. *C. lucida.* ([illegible].) The following are varieties of this species:

C. C.-g. linearis (linear). *l.* linear, lanceolate. Spines few, shorter.

C. C.-g. nana (dwarf). *l.* ovate-lanceolate, paler beneath.

C. C.-g. ovalifolia (oval-leaved).* *fl.* white. May and June. *l.* oval, serrated, rather pilose on both surfaces, shining above; stipules [illegible] deeply serrated, glandular. *h.* [illegible]. United States, [illegible]. (B. R. [illegible].)

C. C.-g. prunifolia (Prunus-leaved).* *fl.* white; [illegible]. May and June. *l.* broad-ovate, unequally [illegible], glabrous; petioles rather glandular. *h.* [illegible]. North America, [illegible]. (B. R. [illegible].)

C. C.-g. pyracanthifolia (Pyracantha-leaved). *l.* oblong-lanceolate, [illegible]. SYN. *C. salicifolia.*

C. C.-g. splendens (splendid). *l.* obovate-cuneiform.

C. Douglasii (Douglas').* *fl.* white. May. *fr.* dark purple [illegible]. *l.* [illegible], some oval, doubly serrated, wedge-shaped at the base, glabrous. Branches ascending; spines rigid, straightish. *h.* 10ft. to 15ft. North-west America, 1827. (B. R. 1810.)

C. flava (yellow).* *fl.* white, usually solitary. May. *fr.* yellow, turbinate, edible. *l.* [illegible], serrated; petioles short; stipules cordate, and, as well as the calyces, glandular. *h.* [illegible]. United States, [illegible]. SYNS. *C. caroliniana* and *C. glandulosa.* (B. R. 1858.)

C. florentina (Florentine). *fl.* white. May. *fr.* ovate, globose. *l.* ovate-oblong, cordate at the base, [illegible]. Florence, [illegible].

C. glandulosa (glandular). A synonym of *C. flava.*

C. heterophylla (various-leaved).* *fl.* white; corymbs many-flowered, glabrous. May. *l.* glabrous, falling off very late in the season, [illegible] pinnatifid at the apex; lobes sub-serrated, acute. *h.* 10ft. to 20ft. Orient, 1816. (B. R. 1161, 1847.)

C. lucida (shining). A synonym of *C. Crus-galli.*

C. maroccana (Marocco). A synonym of *C. maura.*

C. maura (Mediterranean). *fl.* white; pedicels elongated; corymbs terminal, glabrous. May. *fr.* scarlet. *l.* cuneated, three-lobed and pinnatifid, glabrous and glandless; stipules sub-[illegible] cut. *h.* 15ft. to 20ft. South Europe, 1822. SYNS. *C. Aronia* and *C. maroccana.*

C. melanocarpa (black-fruited). *fl.* white; calycine lobes [illegible]. May and June. *fr.* black. *l.* [illegible] at the base. *h.* 10ft. to 20ft. Taurin, [illegible]. (B. R. [illegible].)

C. mexicana (Mexican). *fl.* white, large; corymbs terminal. June. *fr.* large, pale green, or yellowish, when ripe [illegible] [illegible]. Mexico, [illegible]. Evergreen against a wall, and sub-evergreen as a standard, in the climate of London and southwards. (B. R. 1910.)

C. microcarpa (small-fruited). A synonym of *C. spathulata.*

C. nigra (black).* *fl.* white; calyces villous. May and June. *fr.* black. *l.* lobately sinuated, serrated, [illegible]. *h.* [illegible]. Eastern Europe, [illegible]. SYN. *C. carpatica.* (L. B. C. 1021.)

C. odoratissima (very sweet-scented).* *fl.* white, very sweet-scented, [illegible]. May and June. *fr.* yellow, globose, [illegible]. *l.* deeply pinnatifid, pubescent; lobes lanceolate, acute, serrated. *h.* 10ft. to 20ft. Crimea. (B. R. 1885.)

C. orientalis (Eastern).* *fl.* white. May and June. *l.* three-lobed, pubescent beneath; lobes ovate, deeply toothed at the apex, the middle one trifid; stipules broad, cut. Branches clothed with hoary tomentum. *h.* 12ft. to 20ft. Levant, 1810. SYN. *C. sanguinea.* (B. R. 1852.)

FIG. [illegible]. CRATÆGUS OXYACANTHA.

C. Oxyacantha (sharp-spined).* Common Hawthorn; White-thorn. *fl.* white, [illegible] [illegible]. *h.* [illegible]. Britain. See Fig. [illegible]. The varieties of this are very numerous. The following are the most important:

C. O. apetala (without petals). *fl.* without petals, or nearly so.

C. O. aurantiaca (orange).* *fr.* orange-coloured.

C. O. aurea (golden).* *fr.* [illegible], golden-yellow. A most distinct variety.

Cratægus—*continued.*

C. O. capitata (headed). Of a somewhat fastigiate habit, and producing its flowers in close heads, mostly at the extremities of its branches.

C. O. eriocarpa (woolly-fruited).* *fr.* woolly when young. A robust, rapidly-growing variety, with large leaves, strong thick shoots, a clear white bark, and few thorns.

C. O. filicifolia (fern-leaved).* *l.* deeply cut, fern-like.

C. O. flexuosa (zigzag). Branches small, twisted in a zigzag manner.

C. O. flore-pleno albo (white double-flowered). *fl.* white, dying off a beautiful pink, double, produced in great profusion.

C. O. foliis-argenteis (silver-leaved). *l.* variegated with white.

C. O. foliis-aureis (golden-leaved). *l.* variegated with yellow.

C. O. horrida (horrid). A very prickly variety.

C. O. laciniata (cut).* *l.* finely cut, plant less robust, and the fruit smaller than in the type.

C. O. obtusata (obtuse). Distinguished from the type by its smaller, obovate, less cut, flat, and shining leaves.

C. O. Oliveriana (Oliver's). A synonym of *C. melanocarpa.*

C. O. præcox (early).* Glastonbury Thorn. *fl.* frequently out on Christmas Day. *l.* appearing in January or February.

C. O. pteridifolia (Pteris-leaved).* This resembles the variety *laciniata*, but the leaves are longer in proportion to their breadth, and more elegantly cut.

C. O. punicea (scarlet). A synonym of *C. O. rosea-superba.*

C. O. quercifolia (Oak-leaved). Oak-leaved. Very distinct.

C. O. rosea (rose-coloured). *fl.*, petals pink, with white claws.

C. O. rosea-superba (superb rose-coloured) has larger petals, which are of a dark red, without white on the claws. SYN. *C. O. punicea.*

C. O. sibirica (Siberian). An early-leafing variety.

C. parvifolia (small-leaved). *fl.* white, small, usually solitary. May. *fr.* yellow, rather turbinate. *l.* obovate-cuneiform, deeply serrated, pubescent; stipules setaceous. *h.* 6ft. United States, 1704. SYN. *Mespilus parvifolia.* (W. D. B. 65.)

C. populifolia (Poplar-leaved). A synonym of *C. cordata.*

C. punctata (dotted). *fl.* white; calyx rather villous. May. *l.* obovate-cuneiform, glabrous, serrated. *h.* 15ft. to 20ft. United States, 1746. (W. D. B. 57.) There are varieties of this species with either yellow or red fruit, which are usually dotted.

FIG. 542. FRUITING BRANCH OF CRATÆGUS PYRACANTHA.

C. Pyracantha (Pyracantha)* Evergreen Thorn. *fl.* white. May. *fr.* of a beautiful scarlet colour, about the size of a pea, disposed in cymes, remaining on the tree nearly all the winter. *l.* glabrous, evergreen, ovate-lanceolate, crenate. *h.* 10ft. to 20ft. South Europe, &c., 1629. See Fig. 542. There are one or two forms of this species.

C. pyrifolia (Pyrus-leaved). *fl.* white. June. *fr.* yellowish-red, small. *l.* ovate-elliptic, deeply serrated, rather plicate and somewhat hairy. *h.* 6ft. to 10ft. United States, 1765. (B. R. 1877.)

C. salicifolia (Willow-leaved). A synonym of *C. Crus-galli pyracanthifolia.*

C. sanguinea (bloody). A synonym of *C. orientalis.*

Cratægus—*continued.*

C. spathulata (spathulate). *fl.* white; corymbs few-flowered; pedicels short; calyces tomentose. May. *l.* small, in fascicles, narrowed a long way at the base, somewhat spathulate and trifid. Spines strong. *h.* 8ft. to 12ft. United States, 1806. SYN. *C. microcarpa.* (B. R. 1846.)

C. tanacetifolia (Tansey-leaved).* *fl.* white; calycine lobes acutish, reflexed, hairy. May. *fr.* greenish-yellow, globose. *l.* deeply pinnatifid, downy; lobes oblong, acute, few-toothed. *h.* 12ft. to 20ft. Levant, 1789. (B. R. 1884.)

CRATÆVA (named after *Cratevas*, a Greek botanist, who lived in the time of Hippocrates). Garlic Pear. ORD. *Capparideæ.* Unarmed stove evergreen shrubs or trees, with terminal cymes or racemes of large flowers, and trifoliolate leaves. They require a compost of loam, peat, and rotten dung. Cuttings will root freely, if planted in a pot of sand, and placed under a hand glass, in heat.

C. Tapia (Tapia). *fl.* whitish, on long peduncles, forming loose terminal panicled racemes. *fr.* as large as an orange, and, when ripe, having a strong scent of garlic, which is communicated to the animals that feed on it. *l.*, leaflets ovate-acuminated, unequal at the base. *h.* 30ft. to 40ft. Tropical America, &c., 1752.

Other species usually enumerated as being in cultivation are: *gynandra*, *Roxburghii*, and *tapioides.*

CRAWFURDIA (named after John Crawfurd, a Governor of the Island of Singapore; author of a History of the Indian Archipelago). SYNS. *Pterygocalyx*, *Pterospermum.* ORD. *Gentianeæ.* Six or seven species of showy, half-hardy, glabrous, twining herbs, natives of East Indies, the Malayan Archipelago, Japan, and Manchuria. Flowers pale blue, axillary, solitary or in fascicles, large and showy. Leaves opposite, three-nerved, acuminated. Branches elongated, slender. Crawfurdias thrive in a mixture of loam, sand, and peat, with thorough drainage. They may be increased by cuttings, or by seeds. The latter should be sown in a gentle heat, in spring; and, in the middle of May, the seedlings should be transplanted at the foot of a south wall, outside.

C. fasciculata (fascicled).* *fl.* purple, large; corolla tubular; limb furnished with accessory segments; peduncles short, fascicled, bibracteate. August. *l.* lanceolate, acuminated, three to five-nerved. Himalayas, 1855. (B. M. 4838.)

C. luteo-viridis (yellowish-green). *fl.*, corolla between funnel and bell-shaped, twice as long as the calyx lobes; tube green; limb white, with green folds. *l.* ovate, ovate-cordate, or ovate-lanceolate; margin entire, or waved. Stem slender, red with age. Sikkim Himalayas. A very showy twiner when laden with its ellipsoid, cylindric, brilliant red fruits. (B. M. 6539.)

C. speciosa (showy).* *fl.* purple, solitary, on long, nearly naked pedicels; corolla campanulate, without accessory lobes or segments. *l.* ovate, acuminated, five-nerved. Himalayas, 1879.

CREEPERS, or TRAILERS, differ from climbing plants in assuming both a procumbent and pendent disposition. They are very generally suitable for growing in baskets and for furnishing rockeries.

CREEPING SAILOR. *See* **Saxifraga sarmentosa.**

CRENATE. Having convex flat teeth.

CRENULATE. Having small round notches.

CREOSOTE PLANT. *See* **Larrea mexicana.**

CREPIDARIA. A synonym of **Pedilanthus.**

CREPIS (from *krepis*, a slipper). Hawksbeard. ORD. *Compositæ.* About 130 species of hardy annuals or perennials, with slender, simple, white (rarely brown) silky pappus hairs, in many series; achenes cylindrical, striate, the beak long, short, or absent. Two only are worth growing. *C. aurea* is a neat border perennial, and *C. rubra* a pretty annual; both thrive in sandy soil. *C. aurea* may be propagated by division, in spring; and both by seed, sown at the same time, in the open border. Other species formerly included here will be found under **Tolpis.**

C. aurea (golden). *fl.-heads* orange, usually solitary; involucre and stem covered with long black hairs, mixed with a few small white woolly ones. Autumn. *l.* radical, spathulate, oblong, dentate, or runcinate, light green, shining. *h.* 4in. to 12in. Alps.

C. rubra (red).* *fl.-heads* red, usually solitary; involucre hispid, outer bracts scarious. Autumn. *h.* 6in. to 12in. Southern Europe. SYN. *Barkhausia rubra.* See Fig. 543. (S. F. G. 801.)

Crepis—*continued.*

FIG. 543. CREPIS RUBRA, showing Habit, and Single Flower-head (natural size).

CRESCENTIA (named after Pietro Crescenzi, an Italian writer on agriculture, in the thirteenth century, author of "Opus ruralium commodorum"). ORD. *Bignoniaceæ*. Large stove evergreen, spreading trees. Flowers solitary, rising from the trunk or branches; corolla large, sub-campanulate; tube short; throat large, ventricose; limb spreading, five-cleft, unequal; lobes toothed or curled. Leaves alternate, solitary, or in fascicles, simple, entire. They grow well in a mixture of loam, peat, and sand. Ripened cuttings will strike root in sand, under a hand glass, in heat. These trees require to be so large before they reach a flowering state, that it is not likely they will ever be much cultivated in this country. All are natives of tropical America. Some of the species described are: *acuminata*, *cucurbitina*, *Cujete* (Calabash-tree), *macrophylla*, and *obovata*.

CRESCENTIACEÆ. An order now included under *Bignoniaceæ*.

CRESS, AMERICAN or **LAND** (*Barbarea præcox*). This much resembles Water Cress in flavour. Sow monthly from March till September, in rows 1ft. apart, and thin to 4in. or 6in. from plant to plant. Gather the outer leaves only for use; and, in winter, transfer some plants to hand-lights, or protect with bracken or dry litter during frost. The leaves may be used for the same purposes as the common Cress.

CRESS, GARDEN (*Lepidium sativum*). Very popular salading plants, generally grown (and eaten) with Mustard, both requiring very similar treatment. For small salading the common Cress is largely used, and the seed is cheaper than the other kinds. Boxes, from about 1ft. square, and 3in. deep, are most useful for growing it in winter. They should be filled to within ½in. of the top with friable soil, and the seed sown rather thickly, without covering them with soil. The boxes should be covered with panes of glass, and placed, after watering, in a warm house; in from ten to fourteen days, the salad will be fit for use. A succession may be kept up by frequent sowings. Cress can be grown out of doors in summer, either in boxes or sown in a cool place. It should be kept free from soil on the top, or it is difficult to have it without being gritty.

Sorts. Plain or common, the sort used when only the seed leaves are formed; Curled, this is a hardy sort, and, if allowed to grow, the leaves may be used for garnishing as well as salad; Golden or Australian, a dwarf yellowish form, grown the same way as the preceding, but not fit for use so early as common Cress.

CRESS, INDIAN. *See* **Tropæolum.**

CRESS ROCKET. *See* **Vella Pseudo-Cytisus.**

CRESS, WATER (*Nasturtium officinale*). Water Cress is in great demand at all times, excepting in two or three of the summer months, when the plants are flowering and producing their seed. It is a hardy perennial and a native of Britain, where it grows in ditches and small streams. The best quality is obtained from shallow streams of running water, free from mud if possible, as the latter spoils the flavour. Propagation is effected by seed, or by division of

FIG. 544. WATER CRESS (NASTURTIUM OFFICINALE).

the plants. Water Cress (see Fig. 544) may be cultivated in soil if a suitable place cannot be obtained to grow it in water, but the produce is inferior. If required to be grown in the ground, a shady, cool position should be chosen, and the seed sown in spring, in shallow drills, thinning the plants to 6in. when large enough. The soil must be kept constantly moist by watering. In autumn, some plants may be placed in pans, and transferred to a warm house to keep up a supply during winter. The advantages are many if a shallow stream can be obtained. Well-rooted young specimens should be selected; and, when established, the more the tops are gathered, the better, as the plants are thereby induced to produce more. The motion of the water prevents its freezing in winter, consequently the Cress may be gathered at any time. Special shallow ponds, with appliances for drawing all the water off when required, are the best means of cultivation; but such a system cannot, in the majority of cases, be followed. There are two or three forms of Water Cress; but there is not much difference in flavour when grown under the same conditions. The large Brown-leaved is the one most preferred in the market, but the Green-leaved is said to be of the easiest culture.

CREST. Applied to the raised regular or irregular appendage terminating any particular organ.

CRIBROSE. Pierced with holes, like a sieve.

CRICKETS. A group of insects, comprising House Crickets (*Acheta domestica*, see Fig. 545), Field Crickets

FIG. 545. HOUSE CRICKET (GRYLLUS DOMESTICUS).

(*Acheta campestris*), and Mole Crickets (*Gryllotalpa vulgaris*). The Orthoptera, to which the Crickets belong,

Crickets—*continued.*

do not undergo a complete metamorphosis. The female bears an ovipositor, composed of four narrow elastic blades. By means of this, she is enabled to deposit her eggs in the ground, or elsewhere, in the most suitable places. The larvæ, when hatched, differ very little in general appearance from the perfect insect; indeed, they are perfectly formed, except in having no trace of wings. This fact explains how it is that we find, associated together, individuals differing much in size, and but slightly in appearance. The Field Cricket differs from the House Cricket in being somewhat larger, stouter, and darker. It lives in fields or banks, in burrows of considerable depth. If troublesome, it may be caught by pushing a straw into the burrow; the insect usually seizes the intruding body, and may be dragged out by it. To garden plants, the **Mole Cricket** is far more hurtful than the other kinds. Crickets can be destroyed by the methods mentioned for **Cockroaches**. For eradicating both these insects, various preparations are sold. Where poisons would be objectionable, fresh Rhubarb leaves, or oatmeal and salt, will be found useful, as will also Carbolic Acid, poured into their holes.

CRINITA. A synonym of **Pavetta** (which *see*).

CRINODENDRON. *See* **Tricuspidaria.**

CRINONIA. A synonym of **Pholidota** (which *see*).

CRINUM (from *Krinon*, the Greek name for Lily). ORD. *Amaryllideæ.* A large genus of very handsome bulbous plants. Perianth funnel-shaped, half six-cleft, with a long, slender tube, and a six-parted limb of nearly equal segments, which are erect, spreading, or reflexed.

PROPAGATION may be effected by seed, or by offsets. The former are of considerable size, and should be sown singly, as soon as ripe, in 3in. or 4in. pots, the roots, when formed, being so large and succulent. Sow in sandy loam and leaf mould, place in a temperature of from 70deg. to 80deg., and keep rather dry until the plants appear, when more moisture should be applied. As most of the species are partially or entirely evergreen, young plants may be grown on all the season, without much drying off. With plenty of heat and moisture, rapid growth is insured when once they are well started, some soon attaining sizes large enough for flowering. Some species produce offsets pretty freely, while others are very shy in this respect. Where they can be obtained, a great saving of time is effected, as large plants are formed much quicker than by seed. They should be removed when rather small, on account of injury to the roots, and as many roots as possible must be preserved. The young plants should be potted separately, and grown on as recommended for seedlings. Crinums require copious supplies of water at all times when in growth; even young specimens will bear much more than the majority of other bulbs. Being distributed over rather a wide area of tropical and sub-tropical countries, they are of different degrees of hardiness. Some require a high temperature, and a moist position in the stove; others succeed in a greenhouse; and a few are sufficiently hardy to thrive in a sheltered position outside, with protection in winter.

CULTIVATION. The stove and greenhouse species cultivated indoors require large pots or tubs in most cases, as the roots are numerous and fleshy. Those of from 1ft. to 2ft. in diameter will be necessary for flowering bulbs; and, if a suitable compost be used and ample drainage provided, the plants may be shifted into these from much smaller pots without any fear of injury being entertained. It will not be necessary to repot Crinums annually when they reach such a size, if plenty of water is supplied, and a top-dressing of good soil be given when growth commences, in spring. This is also the best season for potting any that require it. Turfy loam, with some fibry peat and charcoal, all broken and used as lumpy as possible, form a good and lasting compost. After potting or top-dressing in spring, Crinums should be started into

Crinum—*continued.*

growth by being placed in stove heat, or in a somewhat cooler, but at the same time close, temperature, according to the requirements of individual species. Frequent syringings should be given, and some liquid manure may occasionally be applied to established plants. The flowers are all very beautiful, and are produced at various times throughout the summer, but more particularly towards the autumn. After flowering, water should be partially withheld for the winter or resting period, and the plants fully exposed to the sun. Crinums are seldom much injured by sunshine, but a slight shading is preferable in summer, when some of the leaves are young and tender.

Outdoor Culture. A rich soil, in a sheltered south border, with plenty of drainage provided, is requisite for success with Crinums in the open air. Deep planting is recommended if they are to remain all the winter, in order that the bulbs may be out of the reach of frost. They should be of a good size before planting out. The best season is the end of May, as time is then afforded for the plants to flower and the roots to become established before winter. They must be kept clean, and watered when necessary. On the appearance of frost, the necks of the bulbs should be protected with haybands or fern; and when the leaves die away, the whole may be covered with cocoa-nut fibre. Where safety cannot thus be insured, on account of locality, it is best to lift and store the bulbs for the winter in a cool house or shed, and plant out again the following May. A stake must be placed to the flower-scape, when it appears, to prevent injury from rough wind. *C. Moorei* is one of the most beautiful species for greenhouse or outdoor cultivation, and is, moreover, almost certain to flower annually after the bulbs are strong enough. *C. asiaticum*, *C. capense*, and *C. Macowani*, amongst others, will also succeed in suitable positions outside.

C. amabile (lovely). *fl.* twenty to thirty in an umbel, very fragrant; perianth tube bright red, cylindrical, 3in. to 4in. long; segments same length, spreading or revolute; scape 2ft. to 3ft. long, ancipitous. Summer. *l.* 3ft. to 4ft. long, 3in. to 4in. broad, lorate, tapering gradually to a point. Bulb small; neck about 1ft. long. Sumatra, 1810. Stove. (B. M. 1604.)

C. americanum (American). *fl.* three to six in an umbel, very fragrant; perianth tube 4in. to 5in. long; segments lanceolate, 3in. to 4in. long, white on the back; peduncle 1½ft. to 2ft. long. Summer. *l.* six to ten, arcuate, lorate, 2ft. to 3ft. long, 1½in. to 2in. broad. Bulb ovoid; neck short. South United States, 1752. Stove. (B. M. 1034.)

C. amœnum (pleasing). *fl.* six to twelve in an umbel; perianth tube greenish, 3in. to 5in. long; segments spreading, lanceolate, 2in. to 3in. long, pure white; scape 1ft. to 2ft. long. Summer. *l.* rosulate, linear, sub-erect, 1½ft. to 2ft. long, 1in. to 2in. broad. Bulb globose, 2in. to 3in. in diameter. India, 1807. Stove.

C. angustifolium (narrow-leaved). *fl.* five to six in an umbel; perianth tube 3in. to 4in. long; segments lanceolate, 2½in. long, and ½in. broad at the middle; scape about 1ft. long. Summer. *l.* linear, 1½ft. to 2ft. long, 1in. to 1½in. broad. Bulb sub-globose; neck very short. North Australia, 1824. Greenhouse. SYN. *C. arenarium.* (B. M. 2355.) There are two or three forms of this species.

C. aquaticum (aquatic). A synonym of *C. campanulatum.*

C. arenarium (sand-loving). A synonym of *C. angustifolium.*

C. asiaticum (Asiatic).* Asiatic Poison Bulb. *fl.* about twenty in an umbel; perianth tube slender, cylindrical, 3in. to 4in. long, tinged with green; segments white, linear, 2½in. to 3in. long; peduncle ancipitous, 1½ft. to 2ft. long. Bulb 4in. to 5in. in diameter; neck 6in. to 9in. long. Tropical Asia, 1732. Greenhouse. (B. M. 1073.) *C. anomalum*, *C. declinatum* (B. M. 2231), *C. plicatum* (B. M. 2908), *C. procerum* (B. M. 2684), and *C. sinicum*, are mere forms of this species.

C. augustum (august). *fl.* twelve to twenty in an umbel; perianth 3in. to 4in. long, tinged with red; scape lateral, 2ft. to 3ft. long, compressed. April. *l.* twenty to thirty, lorate, 2ft. to 3ft. long, 3in. to 4in. broad. Bulb ovoid, nearly 1ft. high and 6in. in diameter. Mauritius, 1818. Stove. One of the most effective species of the genus. (B. M. 2397.)

C. australe (Southern). A synonym of *C. pedunculatum.*

C. Balfourii (Balfour's).* *fl.* ten to twelve in an umbel, very fragrant; perianth tube greenish, 2in. long; segments pure white, oblanceolate, 2in. long, ½in. broad at the middle; peduncle axillary, compressed, 1½ft. long. October. *l.* ten to twelve, lorate, spreading, about 1ft. long. Bulb 3in. in diameter; neck short. Socotra, 1880. Stove. (B. M. 6570.)

Crinum—*continued.*

C. brachynema (short-filamented). *fl.* fifteen to twenty in an umbel; perianth tube green, 1½in. to 1¾in. long; limb pure white, 2in. long, with oblanceolate obtuse segments; scape 1ft. long, little compressed. May. *l.* lorate, developed after the flowers, 1½ft. to 2ft. long, 3in. to 3½in. broad. Bulb ovoid, 2½in. to 3in. in diameter. Bombay Presidency, 1840. Stove. (B. M. 5937.)

C. bracteatum (bracteate). *fl.* ten to twenty in an umbel, slightly fragrant; perianth tube tinged with green, 2½in. to 3in. long; segments linear, about as long as the tube; scape about 1ft. long, much compressed. July. *l.* six to eight, 1ft. to 1½ft. long, 3in. to 4in. broad. Bulb ovoid; neck short. Seychelles and Mauritius, 1810. Stove. (B. R. 179.)

C. caffrum (Caffre). A synonym of *C. campanulatum*.

C. campanulatum (bell-shaped). *fl.* five to six in an umbel; tube 1½in. to 2in. long; limb campanulate, 1½in. to 2in. long; segments bright red-purple, oblong, obtuse; peduncles slender, 1ft. long. *l.* linear, 3ft. to 4ft. long, ½in. to 1in. broad. Bulb ovoid. Cape Colony. Stove. SYNS. *C. aquaticum* and *C. caffrum*. (B. M. 2352.)

C. canaliculatum (channelled). A synonym of *C. pedunculatum*.

C. capense (Cape Colony).* *fl.* six to twelve in an umbel; perianth tube 3in. to 4in. long; limb about as long as the tube; segments oblong-acute, flushed with red on the back; scape about 1ft. long. Summer. *l.* about twelve, outer ones spreading, lorate, acuminate, 2ft. to 3ft. long, 2in. to 3in. broad, glaucous; inner ones narrower. Bulb 3in. to 4in. in diameter. Cape of Good Hope, 1752. (Figured under the name of *Amaryllis longifolia* in B. M. 661.) Of this very fine hardy perennial, there are numerous varieties and hybrids.

C. Careyanum (Carey's).* *fl.* four to six in an umbel; perianth tube 3in. to 4in. long; limb horizontal, 3in. to 4in. long, with oblong-lanceolate segments, tinged with red towards the centre; scape 1ft. long, little compressed. Autumn. *l.* eight to ten, lorate, 1ft. to 2ft. long, 2in. to 3in. broad. Bulb globose, 3in. to 4in. in diameter; neck short. Mauritius and Seychelles, 1821. Stove. (B. M. 2466.)

C. cruentum (bloody-flowered). *fl.* five to seven in an umbel, sub-sessile; tube straight, 7in. to 8in. long; perianth segments 3in. long, linear, bright red; scape green, ancipitous, 2ft. long, ½in. thick, low down. Summer. *l.* lorate, 3ft. to 4ft. long, 2in. to 4in. broad. Bulbs large. Mexico, 1810. Stove. (B. R. 171.) *C. Loddigesianum* is believed to be identical with this species.

C. defixum (bent down). *fl.* six to sixteen in an umbel; perianth tube greenish or red-tinted, 2½in. to 3in. long; segments linear; scape 1ft. to 1½ft. long. October. *l.* six to eight, linear, 2ft. to 3ft. long, about 1in. broad. Bulb 2in. to 3in. in diameter. India, 1810. Stove. (B. M. 2208.) *C. ensifolium* (B. M. 2301) is probably a variety of this.

C. erubescens (erubescent). *fl.* four to eight in an umbel; perianth tube 5in. to 6in. long; segments half as long, linear-lanceolate, tinted claret-purple on the outside; scape 1½ft. to 2ft. long. Summer. *l.* numerous, lorate, 2ft. to 3ft. long, 2in. to 2½in. broad. Bulb ovoid; neck short. Tropical America, 1780. Stove. (B. M. 1232.) Several varieties of this species have been described.

C. Forbesianum (Forbes's). *fl.* thirty to forty in an umbel, slightly scented; perianth tube 3in. long; limb funnel-shaped, 4in. to 4½in. long; segments oblanceolate-oblong, white, reddish outside; peduncle hardly 1ft. long, stout. October. *l.* ten to twelve to a rosette, lorate, 3ft. to 4ft. long, 3in. to 4in. broad; margin fimbriated. Bulb ovoid, 6in. to 8in. in diameter. Delagoa Bay, 1824. Stove. (B. M. 6545.)

C. giganteum (gigantic). *fl.* about six in an umbel, with a strong vanilla-like fragrance; perianth tube 4in. to 6in. long; limb campanulate, 3in. to 4in. long, pure white; segments oblong-obtuse, much imbricated; peduncle 2ft. to 3ft. long, compressed. Summer. *l.* lorate, 2ft. to 3ft. long, 3in. to 4in. broad. Bulb 5in. to 6in. in diameter. West Tropical Africa, 1792. Stove. (A. B. R. 152.)

C. Herbertianum (Herbert's). A synonym of *C. zeylanicum*.

C. Kirkii (Kirk's).* *fl.* twelve to fifteen in an umbel; perianth tube greenish, 4in. long; limb horizontal, 5in. long; segments acuminate, above 1in. broad, furnished with a bright red stripe down the back; peduncles sometimes more than one to a bulb, 1ft. to 1½ft. long, ancipitous. September. *l.* lorate, acuminate, 3½ft. to 4ft. long, 4in. to 4½in. broad; margin crisped, white, distinctly ciliated. Bulb globose, 6in. to 8in. in diameter. Zanzibar, 1873. Stove. (B. M. 6512.)

C. latifolium (broad-leaved). *fl.* ten to twenty in an umbel; perianth tube greenish, 3in. to 4in. long; limb horizontal, about as long as the tube; segments oblong-lanceolate, faintly tinged with red in the centre on both sides, reflexing at tip; peduncles 1ft. to 2ft. long. Summer. *l.* numerous, lorate, 2ft. to 3ft. long, 3in. to 4in. broad. Bulb sub-globose. India, 1806. Stove. (B. R. 1297.) *C. insigne* (B. R. 579), *C. moluccanum* (B. M. 2292), and *C. speciosum* (B. M. 2217), are considered by Mr. Baker to be mere varieties of this species.

C. longiflorum (long-flowered). *fl.* six to eight in an umbel; perianth tube 3in. to 4in. long; limb funnel-shaped, as long as the tube; segments oblong, flushed with pink in the centre; peduncle

Crinum—*continued.*

1½ft. to 2ft. long. Summer. *l.* lorate, 4ft. to 5ft. long, 2in. broad. Bulb ovoid, 3in. to 4in. in diameter. Cape of Good Hope, 1816. Greenhouse, or nearly hardy. See Fig. 546. (B. R. 303.)

FIG. 546. CRINUM LONGIFLORUM, showing Habit and Single Flower.

C. longifolium (long-leaved). *fl.* six to twelve in an umbel; perianth tube greenish, 3in. to 4in. long; segments lanceolate, ascending, white, nearly as long as the tube; scape lateral, about 1ft. long. *l.* six to eight, linear, 1½ft. to 2ft. long, 1½in. to 2in. broad. Bulb ovoid, 4in. to 5in. in diameter. ~~Indian~~ Greenhouse. (B. R. 1297.) *C. elegans* (B. M. 2592) is a form of this species.

C. Macowani (MacOwan's).* *fl.* ten to fifteen in an umbel; perianth tube greenish, 3in. to 4in. long; segments oblong, acute, as long as the tube, 1in. to 1¾in. broad, white, with a purplish tinge; peduncles sometimes more than one, 2ft. to 3ft. long. November. *l.* twelve to fifteen, rosulate, spreading, lorate, 2ft. to 3ft. long, 3in. to 4in. broad. Bulb 9in. to 10in. in diameter. Natal, 1874. Greenhouse, or nearly hardy. (B. M. 6381.)

C. Makoyanum (Makoy's). A synonym of *C. Moorei*.

C. Moorei (Moore's).* *fl.* six to ten in an umbel; perianth tube greenish, 3in. to 4in. long; limb funnel-shaped, as long as the tube; segments oblong-acute, faintly flushed with red; peduncles 1½ft. to 2ft. long. Spring or autumn. *l.* twelve to fifteen, spreading, lorate, 2ft. to 3ft. long, 3in. to 4in. broad. Bulb ovoid, 6in. in diameter. Natal, 1874. Greenhouse. SYNS. *C. ornatum* and *C. Makoyanum*. (B. M. 6113.)

C. ornatum (ornamented). A synonym of *C. Moorei*.

C. pedunculatum (pedunculate). *fl.* twenty to thirty in an umbel; perianth tube greenish, 2½in. to 3in. long; segments linear, spreading horizontally; scape ancipitous, 2ft. to 3ft. long. Summer. *l.* twenty, lorate, 3ft. to 4ft. long, 4in. to 5in. broad. Bulb about 4in. in diameter. Eastern Australia, 1790. Greenhouse. SYNS. *C. australe* and *C. canaliculatum*. (B. R. 52.)

C. podophyllum (foot-leaved). *fl.* two in an umbel; tube greenish, 5in. to 6in. long; limb sub-erect, 3in. long; segments oblong-spathulate, acute, less than 1in. broad, white; scape compressed, 8in. to 9in. long. November. *l.* five to six, lanceolate, 1ft. long, 1½in. to 2in. broad at the middle. Bulb sub-globose. Old Calabar, 1879. Stove. (B. M. 6483.)

C. purpurascens (purplish).* *fl.* five to nine in an umbel; perianth tube 5in. to 6in. long; segments lanceolate, 2½in. to 3in. long, spreading, tinted claret-red on the outside; scape hardly 1ft. long, sub-terete. Summer. *l.* about twenty, linear, 1½ft. to 3ft. long, 1in. broad, undulated. Bulb ovoid, about 2in. in diameter. Fernando Po and Old Calabar, 1826. Stove. (B. M. 6525.)

C. scabrum (rough). *fl.* six to eight in an umbel, very fragrant; tube greenish, 4in. to 5in. long; limb funnel-shaped; segments oblong-acute, 1in. broad, bright red down the back; scape compressed, 1ft. to 2ft. long. May. *l.* lorate, 3ft. to 5ft. long, 2in. to 2½in. broad. Bulb large. Probably Africa, 1810. Stove. (B. M. 2180.) *C. submersum* (B. M. 2463) is a form of this species.

C. zeylanicum (Cingalese). *fl.* ten to twenty in an umbel, very fragrant; perianth tube green, or red-tinted, about 3in. to 4in. long; limb horizontal, about the same length; segments 1in. broad, with a broad band of red down the back; scape 2ft. to 3ft. long. Early spring. *l.* six to ten, lorate, 2ft. to 3ft. long, 3in. to 4in. broad. Bulb globose, 6in. in diameter. Tropical Asia and Africa, 1771. Stove. SYN. *C. Herbertianum*. (B. M. 1171; and B. M. 1253, under name of *Amaryllis ornata*.)

CRIOCERIS ASPARAGI. *See* **Asparagus Beetle.**

CRIOCERIS MERDIGERA. *See* **Lily Beetle.**

CRISTARIA (from *crista*, a crest; in reference to the carpels having two crest-like rings in the centre of each). ORD. *Malvaceæ*. A genus of about twenty species of generally prostrate, tomentose herbs, all natives of extra-tropical South America. Probably there are none in cultivation in this country, although most of the species are well worth growing.

C. coccinea. *See* **Malvastrum coccineum.**

CRITHMUM (from *krithe*, Barley; in allusion to the similarity existing in the seed). Samphire. ORD. *Umbelliferæ*. A suffruticose, glabrous, fleshy herb. Umbels compound; involucre and involucels of many leaves. Leaves bipinnate; leaflets oblong, linear; petioles sheathing at the base. Samphire grows best in a warm, dry position, near the sea coast. When grown inland, it requires a sunny situation, and protection during the winter. It may be propagated by divisions, or by seeds; the latter should be sown as soon as ripe, as, if kept till spring, they are longer in germinating.

C. maritimum (maritime). *fl.* white, with yellowish anthers. August. *h.* 1ft. Britain. (Sy. En. B. 606.)

CROCKING. A term applied to the placing of a piece of potsherd over the hole at the bottom of a pot.

CROCOSMIA (from *crocus*, saffron, and *osme*, smell; in allusion to the very pronounced odour of saffron exhaled by the dried flowers of this plant when immersed in warm water). ORD. *Irideæ*. A monotypic genus, generally known as *Tritonia*. The species is a very handsome hardy, or nearly hardy, bulbous perennial, and thrives best in a light, rich, sandy soil. It is often grown in pots for the greenhouse; but, with a little care, it will be found to thrive remarkably well in the open. In cold, northerly situations, the better plan will be to lift the roots in November, and store in frost-proof quarters until the following spring; but they must not be kept so dry as to cause them to shrivel. Propagated by offsets, or by seeds; the latter should be sown in pans, in a cold house, as soon as possible after maturity; but where the Crocosmia does well, the corms increase pretty freely.

C. aurea (golden).* *fl.* brilliant orange-red, few; perianth with a longish curved slender tube, and a nearly regular six-parted limb of oblong segments spreading in a star-like form; spike terminal, branched. Summer and autumn. *l.* narrowly sword-shaped, 1ft. long, ¼in. broad, sheathing at the base of the stem for about 1ft. Stem slightly winged. *h.* 2ft. South Africa, 1846. SYN. *Tritonia aurea*. (B. M. 4335.)

CROCUS (a Chaldean name, applied by Theophrastus). ORD. *Irideæ*. A well-known genus of hardy bulbous plants. Scapes enveloped in a thin tubular sheath; perianth regular, consisting of six (generally) nearly equal segments, and with a long slender tube. Leaves slender, narrow, linear, channelled, with recurved margins; developing after the blossoms have faded, or simultaneously with them. Corms fleshy, with sheathing fibrous coats. This genus contains about seventy species, and is confined to Europe, North Africa, and North and West Asia. It is generally represented in our gardens by about a dozen species, and the innumerable varieties of *C. vernus*. As a great many that enjoy undisputed claims to specific rank are by no means distinct enough in general appearance to arrest the attention of any but specialists, the enumeration of species is confined to those which are in more general cultivation. For full account and descriptions of all the known species, the reader should consult Mr. Maw's "Synopsis," published in the "Gardeners' Chronicle," n. s., vol. xvi.

Some of the species flower in the autumn as freely as, and in a similar way to what, the majority of other species and nearly all the numerous cultivated varieties flower in spring. *C. speciosus* may be mentioned as one of the best. Those, however, which flower from December to January, are so very liable to be injured by severe frosts, that it is better to afford them the shelter of a cold frame.

Crocus—*continued.*

PROPAGATION. This is effected by seed, for raising new varieties; and the increase of the corms perpetuates established species and forms. Each year, one, or in some cases, several young corms are formed, either on the top or by the side of the old one, the latter annually dying away. For increasing stock, these may be lifted and replanted singly, allowing sufficient room for each in its turn to develop new corms the following year. More would be obtained of varieties that increase rapidly, by this method, than if they were left crowded together. Some species increase very slowly, and these, with many that are scarce and valuable, are best left undisturbed, so long as they grow satisfactorily.

Seed. The seed of the Crocus should be sown as soon as ripe, or early in spring, the choicer strains in pots or boxes, using a light sandy soil, and afterwards placing them in a cold pit or frame, while the commoner varieties may be placed in a warm position outside, in a seed-bed. The seed germinates freely, and must be sown thinly, so as to allow the plants space to grow for two seasons in the seed-pan or bed, without lifting. They will need but little attention beyond being occasionally weeded and watered. After the second year, when the corms die down, they should be shaken out, and replanted. In the third or fourth year, most of them will flower, and any good ones may then be selected. It is an excellent plan to top-dress the seed-beds or pans, after the first season, with an inch or two of rich compost.

CULTIVATION. Many of the species thrive on rock-work, in soil that has a good proportion of small stones intermixed, thereby insuring thorough drainage. If planted deeply and permanently in such a position, dwarf-growing plants, such as mossy Saxifrages, may be placed above, and the Crocuses allowed to grow through, when flowering. It is difficult to keep a collection separate and distinct, if planted near each other. The corms, by their mode of propagation underground, gradually become removed to a considerable distance from where they were first placed; and, if other species are near, the whole soon become mixed. The remedy is to lift and replant, or make a limited inclosure for each with slates, placed on edge in the ground. It is not necessary to lift often for any other purpose. As soon as the leaves are ripened, and die away, is the best time for lifting, if it is required. Sandy loam, with the addition of some leaf soil and sharp grit or crushed stones, is a good compost; and it is preferable to prepare this and replant at once. The ordinary varieties of spring-flowering Crocuses, so much cultivated, will grow and flower freely in almost any soil or position. They are very largely imported from Holland, in the autumn of each year; and the quicker planting is taken in hand, after their arrival, the better. The margins of flower-beds, planted with other bulbs, or of borders running parallel with a walk, are positions, among innumerable others, that may be rendered attractive by a mass of differently-coloured Crocuses. The corms can be inserted most regularly in a small trench, about 3in. deep, placing them a similar distance apart. The leaves should be left alone after flowering is over until they ripen, and the corms need not be lifted unless the place is required for other plants in summer. In this case, they may be transplanted, and allowed to ripen elsewhere.

Cultivation in Pots. Spring Crocuses are useful and very ornamental when flowering in pots. The imported roots may be bought cheaply in autumn, and their cultivation is within the reach of all. Place five or six corms in a 5in. pot, or four in a smaller one, and bury them in ashes outside for a time until filled with roots, when they should be very gradually brought on in a cool pit or house. The Crocus will not flower if exposed to fire heat, nor must severe forcing be attempted. If placed in a light position, with a little higher temperature than that outside, each corm will produce several flowers earlier than those planted

Crocus—*continued.*

in the open. The individual flowers do not last long, but there is a succession which extends the season over a considerable period. The stronger-growing sorts succeed well in water if treated like Hyacinths.

C. alatavicus (Alatavian). *fl.* white, small, with a yellow glabrous throat, and without a basal spathe; outer surface of the three outer segments obscurely feathered and freckled with purple. February. *l.* 1ft. long at maturity, $\frac{1}{16}$in. broad, slightly ciliated at margins of keel and blade. Ala Tau Mountains, 1877. There is a white-flowered variety, in which the outsides of the outer segments are coated with pale buff.

C. aureus (golden).* *fl.* bright orange. Spring. *l.* linear; sheaths wide. Corm, coat membranous, with vertical, narrow, fibroid divisions. South-east Europe. This "was one of the first species introduced to cultivation, and is the parent of our yellow garden, or 'Dutch Yellow,' Crocus, and a number of old horticultural varieties—*lacteus*, *sulphureus*, *sulphureus pallidus*, *sulphureus striatus*, &c.—the history of which is unknown; they are not known to occur in a wild state, and all are sterile." SYNS. *C. lagenæflorus*, *C. mœsiacus*, &c.

C. biflorus (two-flowered).* *fl.*, segments of perianth varying from white to a pale lavender; outer surface of the outer segments distinctly feathered with purple markings; yellow within. Spring. *l.* short, erect, narrow, with distinct white midrib. This species has a wider range than any other (extending from Tuscany into Georgia), and none exhibits greater variation in the size and colouring of the flowers. (B. M. 845.) *C. Adami* (B. M. 3868), *C. estriatus*, *C. minimus* (B. M. 2994), *C. nubigenus*, and *C. Weldeni* (B. M. 6211), among many others, are forms of this species.

FIG. 547. CROCUS BORYI.

C. Boryi (Bory's).* *fl.* creamy-white; throat orange-yellow; base of segments marked externally with dull purple lines. Late autumn. *l.* narrow, smooth, produced a little before the flowers. *h.* 3in. to 4in. Greek Isles. See Fig. 547. (B. R. 1847, 16.)

C. byzantinus (Byzantine). A synonym of *C. iridiflorus*.

C. Cartwrightianus (Cartwright's). A miniature form of *C. sativus*. SYN. *C. græcus*.

C. chrysanthus (golden-flowered). *fl.* rich orange-yellow; perianth segments obovate. Very early spring. South-eastern Europe. There are four varieties of this species: *albidus*, *cærulescens*, *fusco-tinctus*, and *fusco-lineatus*.

C. fimbriatus (fimbriated). A synonym of *C. nudiflorus*.

C. fragrans (fragrant). A synonym of *C. versicolor*.

C. græcus (Greek). A synonym of *C. Cartwrightianus*.

C. Imperati (Imperato's).* *fl.* of a lilac-purple on the inside, sweet-scented; "external divisions 1¾in. long and ¾in. broad, marked with three longitudinal dark purple lines, of which the two outer ones and the end of the middle one are feathered with short lines of the same colour." Very early spring. *l.* preceding the flowers, linear, thick, recurved, with a distinct white line in the middle, sheathed for 2in. or 3in. at base. *h.* 3in. to 6in. Italy. (B. R. 1993.)

FIG. 548. CROCUS IRIDIFLORUS.

C. iridiflorus (Iris-flowered).* *fl.*, perianth throat unbearded; outer segments clear, rich purple, much larger than the inner ones, which are pale lilac; anthers orange, shorter than the stigmata; filaments lilac; stigmata purple, multifid. September and October. *l.*, proper ones glabrous, ⅛in. wide, wider than in any other strains; sheathing leaves falling short of proper spathe; proper spathe monophyllous, foliaceous. Corm small, oblate; tunic fibro-membranous, tending to a reticulated structure. Banat and Transylvania. SYN. *C. byzantinus*. See Fig. 548. (B. M. 6141.)

C. lagenæflorus (bottle-flowered). A synonym of *C. aureus*.

C. mœsiacus (Mœsian). A synonym of *C. aureus*.

C. multifidus (much-cut). A synonym of *C. nudiflorus*.

FIG. 549. CROCUS NUDIFLORUS.

C. nudiflorus (naked-flowered).* *fl.* pale bright purple or violet; tube 3in. to 10in. long, and segments 1½in. to 2in. long; throat not hairy. Autumn. *l.* about ¼in. broad, appearing in spring. The corms produce long stolon-like shoots, which form independent corms at the death of the parent. South-west Europe; naturalised in meadows about Nottingham and elsewhere in England. SYNS. *C. fimbriatus*, *C. multifidus*, and *C. pyrenæus*. See Fig. 549. (Sy. En. B. 1500.)

C. Orphanidis (Orphanides'). A synonym of *C. Tournefortii*.

C. pulchellus (beautiful). *fl.* pale bluish-pearl colour, with darker veins, large; throat orange-yellow. Autumn. *l.* ⅛in. broad, smooth, with a prominent narrow keel. *h.* 4in. to 5in. Shores of the Bosphorus, &c. (B. R. 30, 3.)

C. pyrenæus (Pyrenean). A synonym of *C. nudiflorus*.

C. reticulatus (netted). *fl.* varying from white to deep lilac, the outer face of the outer segments feathered with purple; throat

Crocus—*continued.*

glabrous. *l.* $\frac{1}{16}$in. broad, the lateral channels containing one or two ribs.

C. revolutus (revolute). A synonym of *C. susianus.*

FIG. 550. CROCUS SATIVUS.

C. sativus (cultivated). Saffron Crocus. *fl.* violet, variously striped and marked with deeper or lighter tints, fragrant; throat hairy. Autumn. *l.* $\frac{1}{8}$in. broad, ciliated; margins of blade and keel ciliated. Corm rather large, globular, depressed. From Italy to Kurdistan. This species furnishes the saffron of commerce. It appears to have been cultivated in Palestine at the time of Solomon. See Fig. 550. (B. M. Pl. 274.) The following plants, which have been accorded specific rank, are all referable to *C. sativus* as mere forms: *C. Carturightianus*, *C. Elwesii*, *C. Haussknechtii*, *C. Orsinii*, *C. Pallasii* (SYNS. *C. Thomasii* and *C. hybernus*).

C. Sieberi (Sieber's). *fl.*, throat orange, unbearded; perianth a uniform bright lilac, with a rich golden base; anthers orange; stigmata orange-scarlet. February and March. *l.* glabrous, 4in. broad, with open, unribbed, lateral channels. *h.* 2in. to 3in. Greece, &c.

C. S. versicolor (various-coloured). *fl.* varying from white to purple, and with white and purple stripings and featherings, but always with a rich golden base. Crete and the Cyclades.

C. speciosus (showy).* *fl.* bright lilac, internally striped with deep purple lines, large; stigmata orange, conspicuously fringed. Autumn. *l.* $\frac{1}{4}$in to $\frac{1}{2}$in. broad, with prominent keel, erect, appearing almost with the flowers. Corms nearly round. East Europe and West Asia. Probably the handsomest of autumnal-flowering kinds. (B. M. 3861.)

C. susianus (Susian).* Cloth of Gold Crocus. *fl.*, perianth throat glabrous; segments about 1$\frac{1}{2}$in. long and $\frac{1}{2}$in. broad, reflexed, deep orange, the outer face of outer segments variously feathered with deep brown, occasionally self-coloured orange, or evenly suffused with dull brown; anthers orange, about twice the length of the orange filament; the style dividing at the base of the anthers, and produced into long, spreading, entire, orange-scarlet stigmata, which much exceed the anthers. February. *l.*, proper ones reaching to the flowers, the margins of keel and blade ciliated; sheathing leaves falling short of the proper spathe; proper spathe diphyllous. Corm about $\frac{3}{4}$in. broad; tunic of strong reticulated fibre, with long interspaces produced upwards into sharp, wiry points. *h.* 3in. Crimea and Caucasus, 1605. This is one of the earliest spring-flowering species. SYN. *C. revolutus.*

C. Tournefortii (Tournefort's). *fl.* lilac, uniform, bright, with a few purple veins, 2$\frac{1}{2}$in. in diameter; throat orange. Autumn. *l.* appearing with the flowers. Corms large, nearly 2in. long, closely covered with a soft brown membrane. The Cyclades and the Morea. SYN. *C. Orphanidis.* (B. M. 5776.)

FIG. 551. CROCUS VERNUS.

Crocus—*continued.*

C. vernus (spring).* *fl.* lilac, violet, white (never yellow), or streaked with white and violet; inside of the throat always hairy. Spring. *l.* $\frac{1}{4}$in. broad, rarely glabrous; lateral channels wide and open, without ribs, appearing with the flowers. Corm invested with slender anastomosing fibres. Europe. This species was one of the earliest introduced to cultivation, and has become naturalised in several localities in Britain. It is remarkable for the great range of the colouring of its flowers; the endless varieties, from pure white to deep purple, being generally intermixed in its native habitats, and corresponding with the multitude of horticultural varieties which decorate our gardens. See Fig. 551.

FIG. 552. CROCUS VERSICOLOR.

C. versicolor (various-coloured).* *fl.*, perianth throat glabrous; segments about 1$\frac{1}{2}$in. long, varying from purple to white, self-coloured, or externally feathered or veined with purple; the inner and outer segments are nearly similar in their markings; anthers yellow, twice the length of the white, slightly glandular filament; style dividing near the summit of the anthers, and produced into entire orange stigmata, which are not divergent. Spring. *l.*, proper ones glabrous, reaching to the throat at the flowering time, about $\frac{1}{2}$in. broad, and 8in. or 9in. long at maturity, the lateral channels containing two or three ribs; sheathing leaves falling short of the proper spathe; proper spathe monophyllous. Corm pyriform, $\frac{1}{2}$in. wide; tunic of parallel fibres. Maritime Alps. This was one of the earliest species introduced, and, from its tendency to vary in colour and markings, has given rise to a host of horticultural varieties. SYN. *C. fragrans.* See Fig. 552. (B. M. 1110.)

VARIETIES. The following are amongst the best to be obtained, either for pots, or for flower garden decoration in spring:

ALBION STRIPED, white, striped mauve, large and early; ARGUS, blue and white; CAROLINE CHISHOLM, pure white, dwarf; CLOTH OF SILVER, white, striped purple; DAVID RIZZIO, purple, very fine; GENERAL GARIBALDI, dark purple, large and good; GOLDEN YELLOW, extra large and good; MONT BLANC, large, pure white, one of the best; PRINCE ALBERT, fine dark blue; QUEEN VICTORIA, white; SIR JOHN FRANKLIN, dark purple, large; SIR WALTER SCOTT, white, striped lilac, fine.

CROSSANDRA (from *krossos*, a fringe, and *aner*, *andros*, a male; the anthers are fringed). SYNS. *Harrachia* and *Polythrix.* ORD. *Acanthaceæ.* Beautiful evergreen free-flowering stove shrubs. Flowers large, in terminal four-cornered spikes, with broad bracts and narrow bracteoles; corolla with a long tube, and a flat five-cleft limb. Leaves sub-entire, verticillate. There are five species, one of which is a native of the East Indies; the others are from tropical Africa and Madagascar. All are of easy culture in peat and loam. They may be readily propagated by cuttings, which root freely, at almost any time of the year, if planted in sand, and placed in bottom heat.

C. guineensis (Guinea).* *fl.* pale lilac; spike solitary, sessile, 3in. to 4in. high, striate; apex pungent, many-flowered; bracts many pairs, $\frac{1}{2}$in. to $\frac{3}{4}$in. long, imbricated, lanceolate, green. October. *l.* two to four pairs, shortly petioled, 3in. to 5in. long, elliptic, sometimes obovate or oblong, deep green above, with golden reticulated nerves, reddish beneath, with pubescent midrib and nerves. Stem 2in. to 6in. high, erect, rarely branched, light red, covered with a furfuraceous pubescence. Western tropical Africa, 1677. (B. M. 6346.)

C. infundibuliformis (funnel-shaped). A synonym of *C. undulæfolia.*

C. undulæfolia (waved-leaved). *fl.* of a rich reddish-orange, very distinct and attractive, disposed in freely-produced compact

Crossandra—*continued.*

spikes. *l.* stalked, ovate-acuminate, much narrowed to the base; margin wavy. *h.* 1ft. to 3ft. East Indies, 1881. A very ornamental erect-growing stove plant. SYN. *C. infundibuliformis.* See Fig. 553, for which we are indebted to Mr. Bull.

CROSS BEARER. *See* **Asparagus Beetle.**

FIG. 553. CROSSANDRA UNDULÆFOLIA.

CROSSWORT. *See* **Crucianella.**

CROTALARIA (from *krotalon*, a castanet; the pods are inflated, and, when they are shaken, the seeds rattle). ORD. *Leguminosæ.* A large genus containing more than 200 species of stove or greenhouse sub-shrubs or herbaceous plants, widely dispersed over all warm regions. Flowers mostly yellow, with small bracts along the pedicels, or at the base of the calyx. Leaves simple or digitately compound; these latter are usually trifoliolate, rarely five to seven-foliolate. Many species blossom freely, and are very handsome when in flower; but few of those cited by Johnson and Paxton are now to be found in cultivation. All thrive well in any light, rich soil. Young cuttings

Crotalaria—*continued.*

of the shrubby kinds root freely in a pot of sand, with a bell glass placed over them, in a cool house. Seeds, however, usually ripen in abundance; these should be sown on a hotbed, in spring, and, when the seedlings have attained a height of 2in. or 3in., they may be placed separately in pots, and some may be planted out in the open border, in summer, especially those from the outskirts of the tropics. Crotalarias are very liable to the attacks of red spider.

C. cajanifolia (Cajanus-leaved).* *fl.*, racemes many-flowered, almost terminal; calyces clothed with appressed pubescence. July. *l.* trifoliate; leaflets oblong, obtuse, mucronate, cuneated at the base, glabrous above, puberulous beneath, and canescent. *h.* 4ft. to 6ft. Mexico, 1824. Greenhouse shrub.

C. Cunninghamii (Cunningham's).* *fl.* yellow-green, marked with purple lines on the reflexed standard, large, disposed in dense racemes. Summer. *l.* ovate, obtuse. *h.* 3ft. Native of the dry, almost desert regions of North-west and Central Australia, 1869. This is a remarkable looking greenhouse shrub, clothed throughout with velvety, glaucous pubescence. (B. M. 5770.)

C. Heyneana (Heyne's). *fl.* white, blue. *l.* one-foliolate. *h.* 1ft. to 2ft. Malabar, 1868. (B. M. 5974.)

C. juncea (Rush-like).* *fl.* yellow; racemes terminal. June. *l.* lanceolate, on short petioles, clothed with appressed pubescence, as well as the furrowed stems. *h.* 4ft. to 8ft. India, 1700. Stove annual. (B. M. 490.)

C. nana (dwarf). *fl.* yellow; peduncles opposite the leaves, three-flowered; calyx pilose. *l.* oblong, nearly sessile, glabrous, obtuse, mucronate. Plant diffuse. India, &c. Stove annual.

CROTON (from *kroton*, a tick; referring to the appearance of the seeds). SYN. *Tiglium*. ORD. *Euphorbiaceæ*. A large genus (about 500 species) of trees and shrubs—rarely herbs—differing widely in habit and general aspect, dispersed all over the warmer parts of the world. Male flowers: calyx cylindrical, five-toothed; petals five; stamens ten to fifteen. Female flowers: calyx many-leaved; corolla none; styles three, bifid; capsules three-celled. None are worth cultivating as garden plants. Several, however, are very important from an economic standpoint. *C. Tiglium*, from the Indian Archipelago, &c., yields Croton oil, one of the most drastic cathartics known. *C. Eluteria* furnishes the Cascarilla bark, also used in medicine. Others yield resins, &c. *See* **Codiæum**, under which genus will be found included the large class of plants popularly known as *Crotons*.

CROWBERRY. *See* **Empetrum nigrum.**

CROWEA (named after James Crowe, of Norwich, a British botanist, and a great collector of Willows). ORD. *Rutaceæ*. Greenhouse evergreen shrubs. Peduncles axillary, one-flowered, furnished with minute imbricate bracts at their base. Leaves alternate, quite entire, lanceolate, running down the stem a little at the base, and full of pellucid dots. Branches triquetrous. Croweas are very useful as decorative plants, and, if grown in a cool place, they form elegant and striking additions to a select collection. They require a light airy situation, which must be free from draughts, and, being hard-wooded subjects, great care will be needed in watering. The soil best adapted is two parts peat and one of fibrous loam, with a small quantity of sand added. Cuttings will strike, with a gentle bottom heat, in sand, under a hand glass. To keep Croweas short and bushy, the tops should be taken off soon after the cuttings have rooted, which will cause the lateral shoots to push earlier and stronger, than they would if left alone. Croweas do not succeed well on own roots; they should be grafted on Correas or Eriostemons.

C. angustifolia (narrow-leaved).* *fl.* red, shortly stalked, solitary or rarely two together. *l.* sessile, linear, mostly acute. *h.* 1ft. to 3ft. West Australia.

C. latifolia (broad-leaved). A synonym of *C. saligna*.

C. saligna (Willow-like).* *fl.* clear pink. Summer. *l.* lanceolate. *h.* 1ft. to 2ft. New South Wales, 1794. SYN. *C. latifolia*. (B. M. 650.) The plants sometimes met with under the names of *elliptica*, *major*, and *stricta*, are probably varieties of this species.

CROWFOOT. *See* **Ranunculus.**

CROWN BEARD. *See* **Verbesina.**

CRUCIANELLA (diminutive of *crux*, a cross; in allusion to the leaves being placed crosswise). Crosswort. ORD. *Rubiaceæ*. Annual or perennial (mostly) hardy herbaceous plants. Flowers hermaphrodite, spicate or fasciculate, bracteate, or ebracteate; corolla tubular, elongated, funnel-shaped. Leaves whorled, with from four to a considerable number in each whorl, linear or lanceolate. The annual species are not worth growing. The perennials are very pretty plants, of easy cultivation in ordinary garden soil; they are readily increased by seeds, or by divisions, during spring or autumn. There are about twenty-six species, confined to the Mediterranean region and Western Asia.

C. glauca (glaucous). *fl.* yellow, remotely spicate; bracts and floral leaves ovate, ciliated. July. *l.* four in a whorl, linear, mucronate, with prickly revolute edges. Stems erectish, branched. Persia, 1837. Perennial.

C. maritima (maritime). *fl.* cream-coloured, axillary, disposed in interrupted spikes. July and August. *l.* four in a whorl, lanceolate, stiff, marginate, mucronate. Mediterranean region, 1640. Plant suffruticose, procumbent, much branched, glaucous, glabrous. Perennial.

C. suaveolens (sweet-smelling). *fl.* yellow, opposite, disposed in dense spikes; floral leaves and bracts lanceolate, ciliated, a little shorter than the corollas. July. *l.* linear, mucronate, with prickly revolute edges, six or eight in a whorl. Stem herbaceous, erect, branched. West Asia, &c., 1838. Perennial.

CRUCIATE, or CRUCIFORM. Shaped like a cross. A flower is said to be cruciate when four petals are placed opposite each other at right angles, as in the Cabbage.

CRUCIFERÆ. A large and important order of annual, biennial, or perennial herbs, rarely suffruticose. Flowers racemed; sepals four, the two lateral ones often larger and saccate at the base, imbricate in bud; petals four, placed crosswise, imbricate in bud; stamens six (rarely one, two, or four), hypogynous, the two outer opposite the lateral sepals, the four inner longer, in pairs opposite the other sepals. Fruit a long or short two-celled and two-valved capsule (rarely indehiscent). Leaves radical or alternate, exstipulate. The order, sometimes called *Brassicaceæ*, comprises about 170 genera and about 1200 species; they are distributed over all temperate and cold regions, but chiefly belong to the Old World. All are nitrogenous (and contain sulphur), pungent, stimulant, anti-scorbutic, often acrid. Many of them are highly-esteemed plants, such as the Broccoli, Cabbage, Cress, Turnip, &c. The following are some of the best-known genera: *Arabis*, *Brassica*, *Cheiranthus*, and *Hesperis*.

CRYPTANTHUS (from *krypto*, to hide, and *anthos*, a flower; the flowers are nearly buried among the leaves). SYN. *Phodalophilum*. ORD. *Bromeliaceæ*. A genus of stove perennials, epiphytal in a wild state. For culture, &c., *see* **Billbergia.**

C. acaulis (stemless). *fl.* white, in a central, subsessile cluster. *l.* lanceolate, wavy, recurved, dark green, scaly. Brazil, 1829. Plant dwarf, cæspitose. SYN. *Tillandsia acaulis*. (B. R. 1197.)

C. bivittatus (two-striped). *fl.* white. *l.* spreading, recurved, about 9in. long and 1in. to 1½in. broad, rather undulate, acutely toothed at the margin; under surface dull brown, upper green, with two broad longitudinal bands, which pass into dull red at the base of the leaf. Tropical America, 1868. SYN. *Billbergia bivittata*. (B. M. 5279.)

CRYPTOCHILUS (from *kryptos*, hidden, and *cheilos*, a lip: the lip being partly hidden by the sepals). ORD. *Orchideæ*. A genus containing a couple of species of very interesting stove epiphytal orchids, allied to **Trichosma** (which *see* for cultivation).

C. sanguinea (blood-coloured). *fl.* brilliant scarlet, disposed in a terminal erect raceme; sepals cohering in a tube three-lobed at the top, and inclosing the petals and lip. Summer. Pseudo-bulbs clustered, spheroidal, one or two leaved. Nepaul, about 1837. (B. R. 1838, 59.)

CRYPTOCORYNE (from *kryptos*, hidden, and *koryne*, a club; the club-shaped spadix is hidden by the hooded spathe peculiar to this family). ORD. *Araceæ*.

Cryptocoryne—*continued.*

Stove herbaceous perennials, requiring treatment similar to the tender species of **Arum** (which *see*).

C. ciliata (hair-fringed).* *fl.* sweet-scented; spathe pedunculate, long, tubular, fringed at top. June. *l.* entire, petiolate, oblong, linear-lanceolate. *h.* 1ft. East Indies, 1823.

C. spiralis (spiral). *fl.* brown. May. *h.* 1ft. East Indies, 1816. SYN. *Arum spirale.* (B. M. 2220.)

CRYPTOGRAMME (from *kryptos*, hidden, and *gramme*, writing; in allusion to the concealed sori). Mountain Parsley Fern; Rock-Brake. ORD. *Filices.* A monotypic genus of hardy ferns; the only species, although

FIG. 554. CRYPTOGRAMME CRISPA.

comparatively rare and local, is frequently found in stony situations in the North of England and Wales. Sterile and fertile fronds usually different from the same root; Sori terminal on the veins, at first separate, sub-globose,

FIG. 555. CRYPTOGRAMME CRISPA ACROSTICHOIDES.

afterwards confluent, the continuous involucre formed of the changed margin of the frond, rolled over them till full maturity. It is of easy culture in pots or Wardian cases, but requires perfect drainage. *Allosorus*, formerly regularly used for the name of this genus, and even at present regarded as such in some books, is now restricted to a section of the genus *Pellæa*. *See also* **Ferns.**

C. crispa (crisped).* *sti.* tufted, slightly scaly towards the base. *fronds* 2in. to 4in. long, 1½in. to 2in. broad, oblong, tri- or quadri-

Cryptogramme—*continued.*

pinnate; ultimate segments of the barren frond obovate-cuneate, deeply pinnatifid, those of the fertile frond pod-shaped, ⅛in. to ¼in. long. Arctic and North temperate regions (Great Britain) SYN. *Allosorus crispus.* See Fig. 554.

C. c. acrostichoides (Acrostichum-like).* Habit larger and stronger than in type; barren segments thicker in texture, more prominently veined, and not so deeply cut; fertile ones ⅛in. to ½in. long, one line broad; involucre spreading when mature. North-west America. See Fig. 555.

C. c. Brunoniana (Brown's). Habit of type, but the fertile segments oblong, about three lines long, one line broad, with the involucre spreading in the mature plant, and a space left free from fruit in the centre.

CRYPTOMERIA (from *kryptos*, hidden, and *meris*, part; referring to the structure of all the parts of the flower being hidden). Japan Cedar. ORD. *Coniferæ.* Evergreen trees. Flowers monœcious; male catkins solitary in the axils of the upper leaves. Leaves rigid, linear-falcate, acute, quadrangular, scattered. Cones less than 1in. in diameter, terminal, and solitary; scales loose, cuneate, prickly, with from three to six winged seeds. Cryptomerias are hardy in most parts of this country, but their beauty is only fully developed in deep rich soils, with abundance of moisture, and protection from cutting winds. Propagated by seeds and cuttings, planted in sandy soil, under a handlight. Probably there is only one species (*C. japonica*) with a fair claim to that title, but several varieties are described as such.

FIG. 556. CRYPTOMERIA ELEGANS.

C. elegans (elegant).* *l.* linear, flattened, soft in texture, decurrent at the base, acute, spreading, falcate, channelled both above and beneath. Branches short, horizontal; branchlets pendulous at their extremities. Trunk robust, upright. *h.* 20ft. and upwards. Japan, 1861. Autumnal colour bronzy-crimson, which is retained throughout the winter. When well-grown, this is a most beautiful tree. See Fig. 556.

Cryptomeria—*continued.*

C. e. nana (dwarf), is a low dense bushy shrub, with more crowded leaves than the type; it also retains the autumnal colour, except the pendulous green tips of the branchlets.

C. japonica (Japanese). *l.* rigid, incurved, crowded, spirally arranged, 6in. to 9in. long, decurrent at the base. *cones* globular, about ½in. in diameter, composed of numerous scales, bearing three to five seeds each. Branches numerous, brittle, and readily separating from the trunk, frondose, spreading; lower ones deflexed, with the extremities ascending; branchlets very numerous, usually alternate, bright green. Trunk erect, tapering. *h.* 50ft. to 100ft. Japan, 1844. A handsome rapid-growing tree, with an elongated pyramidal outline. There are several varieties, the best of which are described below. Other forms are: *araucarioides*, *nigricans*, and *variegata*.

C. j. Lobbi (Lobb's) differs from the type in its more compact and less pendulous habit; foliage of a brighter and deeper green; leaves shorter, and more closely appressed to the branches. Japan. SYN. *C. viridis.*

C. j. nana (dwarf). A small procumbent bushy shrub, very useful for growing on rockwork. *h.* 2ft. SYN. *C. j. pygmæa.*

C. j. pygmæa (pigmy). A synonym of *C. j. nana.*

C. j. spiralis (spiral). A very curious form, having the falcate leaves closely appressed spirally round the branchlets.

C. viridis (green). A synonym of *C. japonica Lobbi.*

CRYPTOPHRAGMIA. *See* **Gymnostachyum.**

CRYPTOSORUS. *See* **Polypodium.**

CRYPTOSTEGIA (from *kryptos*, concealed, and *stego*, to cover; in reference to the scales in the throat covering the anthers). ORD. *Asclepiadeæ.* Handsome climbing stove evergreens, of easy culture in a mixture of loam and peat. Cuttings root freely if planted in sand, under a glass, in heat.

C. grandiflora (large-flowered).* *fl.* reddish-purple, large; corolla campanulately funnel-shaped; tube furnished with five inclosed narrow-bipartite scales inside, which cover the anthers, being opposite them; *corymbs* trichotomous, terminal. July. *l.* opposite, shortly petiolate, elliptic, bluntly acuminated, shining. East Indies, 1824.

C. madagascariensis (Madagascar). *fl.* pink. June. Madagascar, 1826.

CRYPTOSTEMMA (from *kryptos*, hidden, and *stemma*, a crown; the crown of the flower is hidden). ORD. *Compositæ.* A small genus (the three species of which are described below) of diffuse or creeping, hoary herbs. Pappus uniseriate, paleaceous, hidden amongst the hairs of the achene; receptacle honeycombed; involucral scales in many rows, imbricated. Leaves downy. Seeds should be sown on a gentle hotbed, in early spring. When the seedlings are large enough, two or three may be placed in a pot, and either grown entirely in a greenhouse, or placed out of doors about the middle of June.

C. calendulaceum (Marigold-flowered). *fl.-heads*, ray-florets pale yellow, purplish underneath, many, sterile, slightly three-toothed at the point, two-ribbed; disk-florets greenish, with a black-purple, five-cleft border, hermaphrodite, cut-shaped, smooth; receptacle honeycombed, bristly; peduncles one-flowered at the ends of the branches, two or three together, long, striate, clothed with weak red hairs. May and June. *l.* lyrate pinnatifid, three-nerved, on the upper side green, hispid; on the under tomentose, white. Cape of Good Hope and Australia. A tender annual. (B. M. 2252.)

C. Forbesianum (Forbes's). *fl.-heads*, ray-florets yellow; disk dark-coloured. Summer. *l.* quite glabrous above, snow-white beneath, pinnatipartite (some simple); lobes linear lanceolate, quite entire, with revolute margins. Stemless. Cape of Good Hope.

C. niveum (snowy). *fl.-heads* yellow, solitary. *l.* long-stalked, ovate, cordate, or roundish. Cape of Good Hope. A decumbent or creeping branched herb, white-woolly in most parts. SYN. *Microstephium niveum.*

CUBA BAST. The inner bark of *Hibiscus elatus.*

CUCKOO BUDS. *See* **Ranunculus bulbosus.**

CUCKOO FLOWER. *See* **Cardamine pratensis** and **Lychnis Flos-cuculi.**

CUCKOO PINT. *See* **Arum maculatum.**

CUCKOO SPIT. *See* **Frog Hopper.**

CUCULLATE. Hooded; when the sides or apex of anything are curved inwards, so as to resemble a hood.

CUCUMBER (*Cucumis sativus*). The Cucumber is believed to be a native of warm countries in Asia, and also of Egypt, where it has been extensively grown from a very early period. Fig. 557 represents a lateral growth, showing flowers of both sexes. Its cultivation is a matter of importance in almost every garden, and there are very few of any pretensions where it is not attempted, either in houses, frames, or in the open air, in summer. Cucumbers are also extensively grown for market purposes, and, as a rule, prove very remunerative. To cultivate them successfully, plenty of light, heat, and moisture, are required. Those who grow for supplying the market, invariably use span-roofed houses having large panes of glass, and probably no better could be chosen. Such houses cannot, however, be obtained in the majority of gardens; consequently, those situations should be selected which are most favourable to the above-named necessary conditions.

Cultivation. To keep up a supply all the year round, is a matter of great difficulty where there is not provision for adopting various methods, according to the season. In summer, Cucumbers will grow and fruit freely in frames or pits with a little dung heat; but in winter, a light house, with plenty of both top and bottom-heat at command, is absolutely necessary. Their cultivation outside in summer is a matter of uncertainty, excepting in very warm and sheltered positions, or in the case of the Short Prickly and a few others of the hardier kinds. Cucumbers delight in a rather light soil, and during the spring and summer plenty of water, applying liquid manure frequently at the time they are bearing heavily.

Culture under Glass. Beginning with spring and summer supply, seeds should be sown the end of January, and at short intervals during the three following months, as the plants soon get too large if their respective situations are not ready for them at the proper time; and others should therefore be coming on. If allowed to get pot-bound, they

FIG. 557. LATERAL GROWTH OF CUCUMBER.

become infested with insects, and should be thrown away. It is best to sow singly, in small pots, to prevent injury to the roots when repotting. Plunge them in a good bottom heat, and, as soon as up, admit all the light possible, especially in January and February. The house intended for them should be well cleaned previous to planting, and the soil put in in small heaps, to get thoroughly warmed. Light turfy loam, not broken too small, with the addition of about one-half or one-third the quantity of well-decayed manure, will be found a good compost. The trellis should not be nearer the glass than 1ft., and a stake should be put to the plants as soon as they are put in, to prevent them breaking off. A temperature of 70deg. to 75deg., or higher on bright days, with a minimum night temperature of 60deg., should be maintained, keeping the walls and passages damped frequently. Airing and syringing will greatly depend on the outside temperature; in early spring, very little of either will be necessary; but, as summer

Cucumber—*continued.*

advances, the plants may be syringed morning and evening, using water that has been standing in the house to warm. Plenty of air should be admitted in warm weather, but draughts must be avoided. The training will consist chiefly in stopping the main shoot when on to the trellis, to train the laterals a good distance apart, and keep thinning out, to admit all the light possible. Additional soil should be given each time the roots appear through the mounds, until sufficient is collected to enable the plants to reach their limits, when liquid manure may be applied. Light, thin shading will be necessary in bright weather, or the leaves will burn, especially if there is any water on them. Plants that are required to stand the winter, should be inserted not later than the end of August, or early in September, in order to get them well established before the cold weather sets in. Great care and attention are necessary with winter Cucumbers, particularly during November and December, when least sunshine is generally experienced. All the sun and light possible must be obtained, and it is rarely necessary to open the ventilators at this season, unless the laps of the glass are airtight. Watering must be done very carefully, and syringing, unless in exceptionally mild weather, should be withheld. Cucumbers should not be planted thickly; if in a large house, a good vigorous plant will cover several yards of trellis, and will produce plenty of fruits throughout its whole length. Where space is limited, they may be grown in large pots, and trained up a rafter; top-dressing the plants with rich soil, and supplying liquid or artificial manure. Excellent crops can be obtained by this method if the plants receive attention.

Green Fly, Red Spider, and Thrips are the worst insect enemies to Cucumbers. Fumigating must be done very carefully to destroy the Fly, on two successive evenings. As soon as Red Spider or Thrips are detected, it is best to at once sponge the infested leaves with soapy water, and so prevent the insects spreading to others. The leaves must be handled with great care, as they are very brittle.

Culture in Pits and Frames. In gardens where stable litter and leaves are plentiful, a good supply of Cucumbers may be kept up during the summer by this method, without fire heat. The material to form the hotbed should be well mixed, and occasionally turned over for a week or two before it is required; and, if at all dry, it must be wetted, to cause fermentation. A thickness of about 3ft. will be sufficient for enclosed pits, adding 1ft. more for frames. In the latter case, the bed should be about 3ft. wider than the frames. Tread evenly, and place small heaps of soil at least 9in. from the glass, allowing it to remain with the sashes a little open for a few days, to let off any rank steam, which would prove fatal to the plants. Give plenty of room when growing, thinning out and stopping the shoots, to induce fruitfulness; supply plenty of water when necessary. If sufficient heat cannot be obtained, the frames should occasionally be lined with new fermenting material. As this system is now almost limited to summer cultivation, shading and plenty of air will be required. If Cucumbers be grown in the open air, a warm south aspect should be selected for the purpose. Dig out holes or trenches, and lay the soil on the north side. Fill up the holes with fermenting material, prepared as for frames; put some soil on the top, and plant out in May, affording protection for a time with bell glasses or hand lights. The seed should be sown in heat to obtain these plants about the end of March. Cucumbers produce male and female flowers. Except for seeding purposes, it

Cucumber—*continued.*

is not necessary that the latter should be fertilised, the fruit reaching the same size, and being all the better for the absence of seeds. In winter time, or in the case of weak plants, the whole of the male flowers might with advantage be kept removed. Tubular glasses, about 30in. long, are often used to grow straight Cucumbers for exhibition. Well-formed fruits are placed in them when young, and the glass being fixed by some means, the fruit is protected, and grows, in some cases, nearly the size of the glass. They are not used for ordinary purposes, as for fruit shown in Fig. 558.

Sorts. These are extremely numerous, as far as names are concerned, each year producing many so-called new or

FIG. 558. FRUIT OF CUCUMBER.

improved forms, which, however, do not get into general cultivation. Some grow to a length of over 2ft., but they are often coarse and deficient in quality. The following are amongst the best for general purposes, choosing the

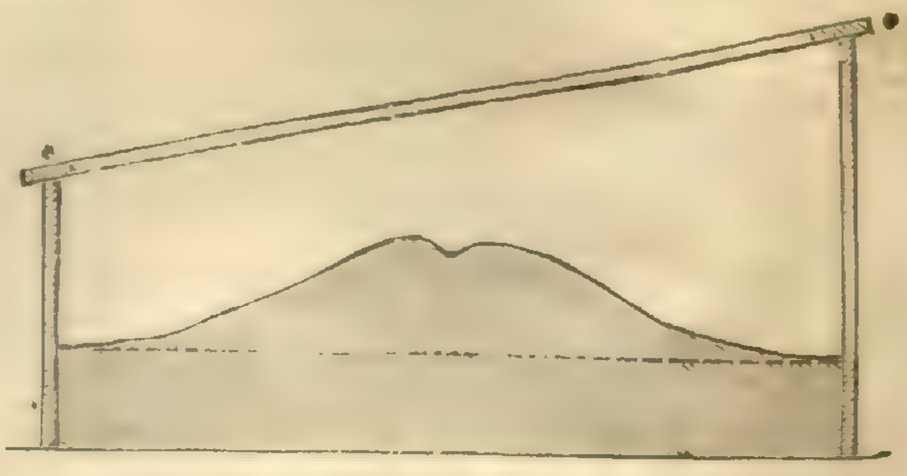

FIG. 559. SECTION OF SIMPLE FRAME.

first if only one variety is grown: Rollisson's Telegraph, Tender and True, Sion House, Turner's Blue Gown, Munro's Duke of Edinburgh, and Marquis of Lorne. Some of these grow a good length; but they are all very tender if used when from 1ft. to 18in. long.

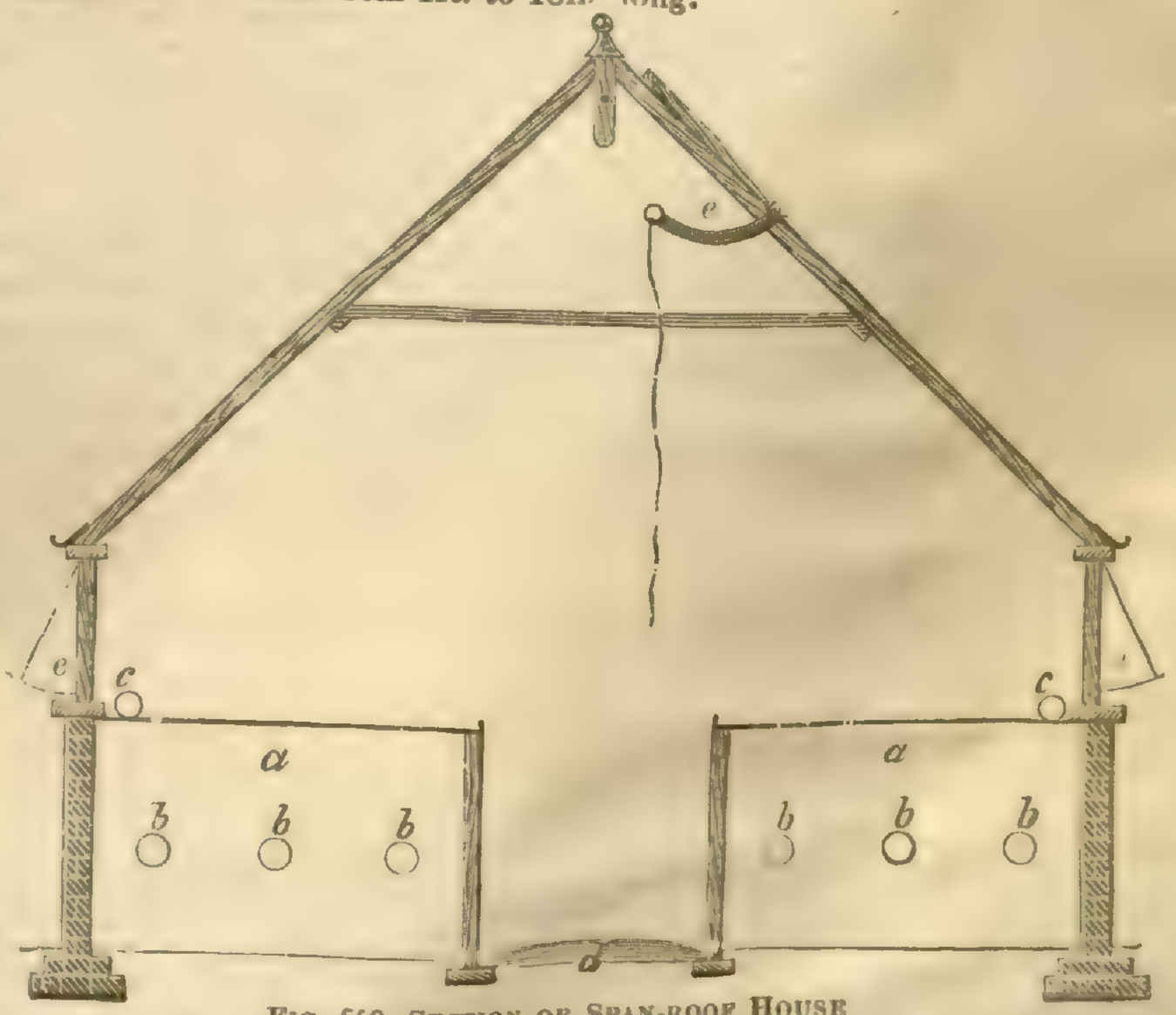

FIG. 560. SECTION OF SPAN-ROOF HOUSE

a a, Space for Bottom Heat; *b b b b b b*, Hot-water Pipes; *c c*, Pipes for Top Heat; *d*, Path; *e e e*, Ventilators.

Cucumber—*continued.*

Houses and Frames. Where accommodation for Cucumbers in the way of proper frames or houses is limited, those of almost any description may be utilised in summer by the aid of dung heat; but for winter supply, houses are necessary, having plenty of piping for fire-heat, with or without the addition of dung. Fig. 559 shows a section of an ordinary frame as prepared for a Cucumber plant. Pieces of slate, or other material, should be laid under the fruits to keep them from the soil. The ordinary span-

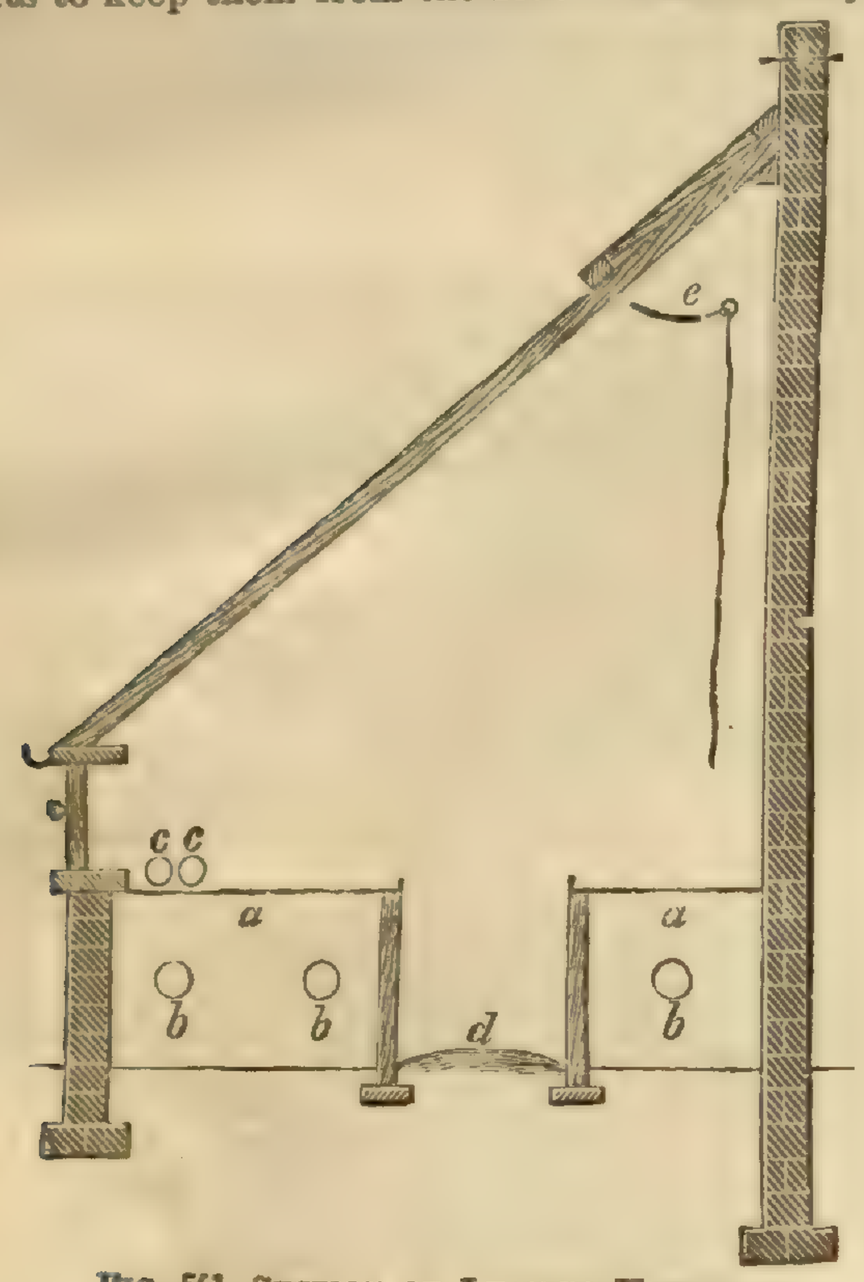

FIG. 561. SECTION OF LEAN-TO HOUSE.
a a, Space for Bottom Heat; *b b b*, Hot-water Pipes; *c c*, Pipes for Top Heat; *d*, Path; *e*, Ventilator.

roofed or half-span frame may be used in summer for Cucumbers, placing some heaps of manure, with soil on the top, a yard or more apart, and putting one plant on each. A lean-to pit, with south aspect, is suitable for winter, where only a few are grown, planting on the stage above the hot-water pipes. A somewhat similar

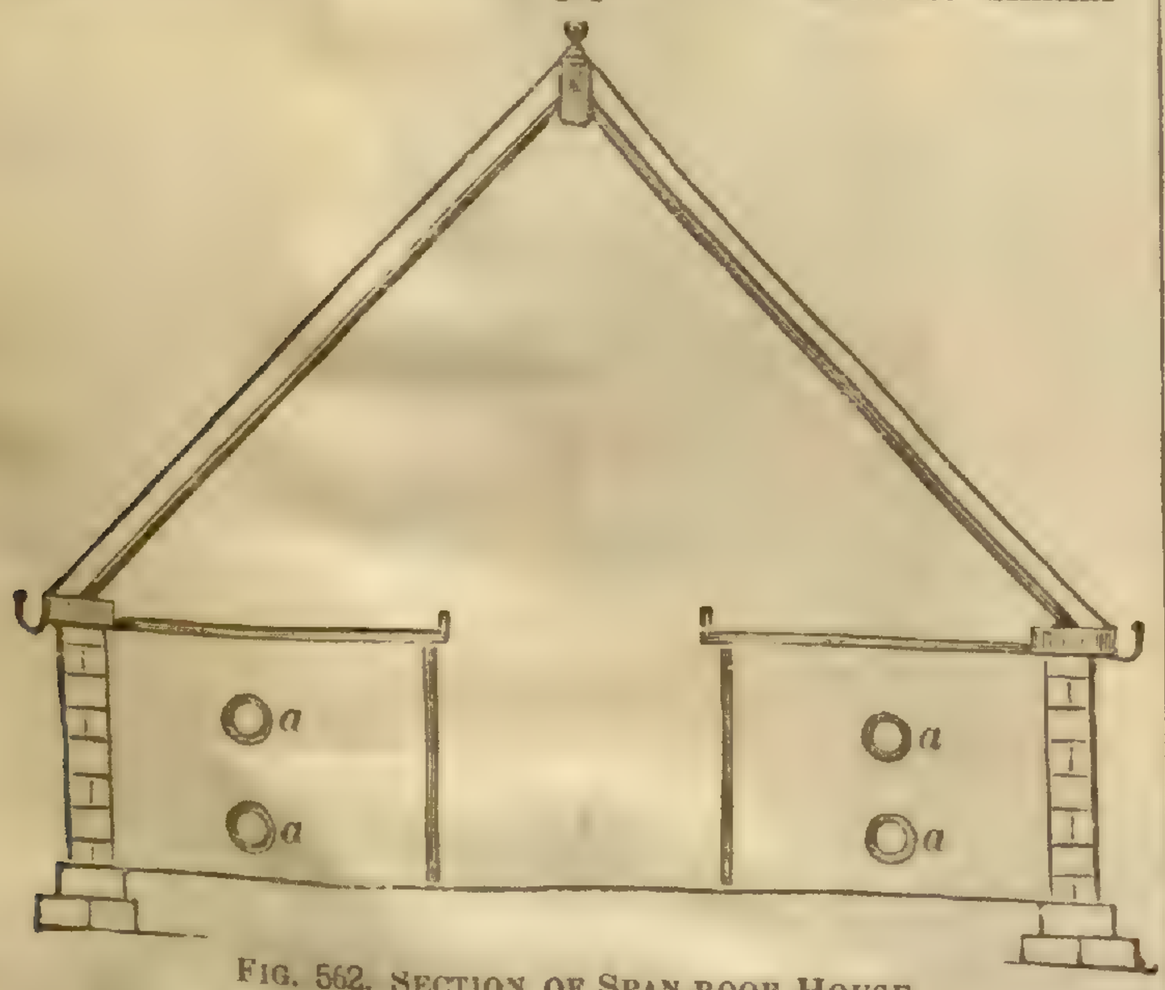

FIG. 562. SECTION OF SPAN-ROOF HOUSE.
a a a a, Hot-water Pipes for Bottom Heat.

system is adopted in a span-roofed house. Both would require additional fire-heat for winter. Fig. 560 repre-

Cucumber—*continued.*

sents a section of a suitable house for growing a large quantity of Cucumbers in summer, when plenty of air is needed. More pipes for the top heat would be necessary for spring. A section of a lean-to house is shown in Fig. 561, where the front part would suit Cucumbers, not allowing them to grow too far up to shade the back wall, which might be utilised for some other crop—Tomatoes, for instance. Fig. 562 shows a span-roof house, with heated beds, that, with the addition of sufficient top heat, might be used at any season. A cham-

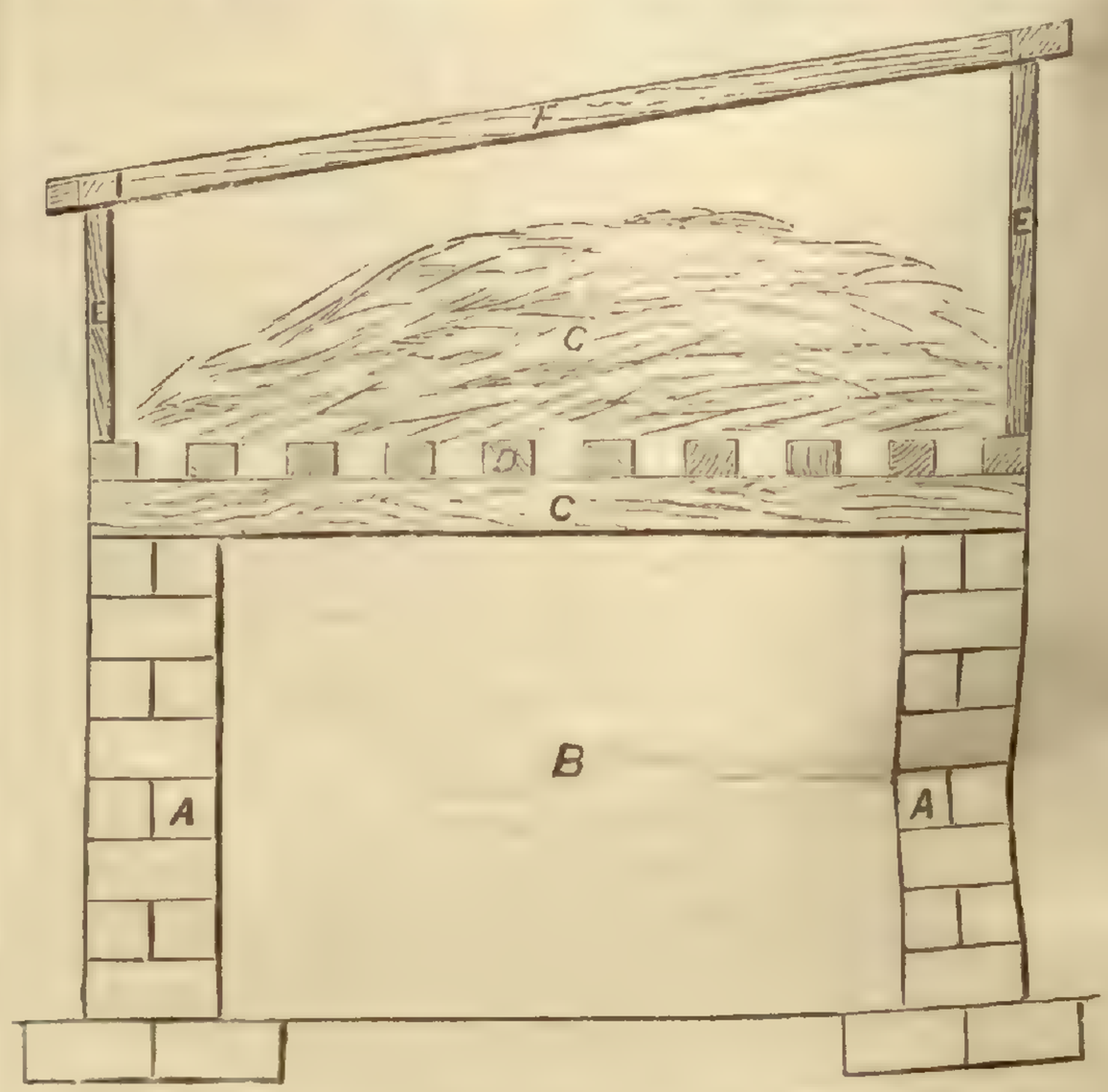

FIG. 563. SECTIONAL END VIEW OF A CHAMBERED FRAME.
A A, Brick Piers; *B*, Internal Space for Hot Manure or other Material; *C*, Support; *D*, Laths to support Bed; *E E*, Sides of Frame; *F*, Sash; *G*, Bed.

bered frame is shown in Fig. 563, which sufficiently explains itself. Such a frame might be fitted with hot-water pipes in the space shown for heating material; and the frame, with the bed removed, may be used for many other purposes. Either fixed or movable trellises, placed from 1ft. to 18in. from the glass, are necessary for all Cucumber houses. The fruits are much cleaner and of a better shape when grown on a trellis; but in the case of frames, this is impracticable.

CUCUMBER-TREE. An American name for **Magnolia acuminata** and **M. Fraserii** (which *see*).

CUCUMIS (etymology of name obscure). Cucumber. ORD. *Cucurbitaceæ*. A well-known genus of half-hardy trailing annuals or perennials. Flowers monœcious. Males in fascicles, rarely solitary; calyx tube turbinate or campanulate; limb five-lobed; corolla sub-campanulate, deeply five-lobed; stamens three, free. Females solitary. Fruit three to six-celled. The seed of all the species require to be sown on a hotbed in spring, and the seedlings should be planted out, when large enough to handle. *See also* **Cucumber, Melon, &c.**

C. Anguria (Anguria). *fl.* usually solitary. June to August. *fr.* white, globose, echinated. *l.* palmately sinuated, cordate at the base, scabrous. Stems rather slender; tendrils simple. Jamaica, 1692.

C. Citrullus. *See* **Citrullus vulgaris.**

C. Colocynthis. *See* **Citrullus Colocynthis.**

C. Hookeri (Hooker's). *fl.* yellow. *fr.* brownish-purple, marked with white bands, ovoid-cylindrical. *l.* deeply five-lobed; lobes obtuse, crenulately-denticulate. Tropical Africa, 1870.

C. Melo (Melon). *fl.*, males: tube of calyx rather ventricose at the base, and rather dilated at the apex; stamens inclosed; anthers shorter than their connectives. Females: calyx and

Cucumis—*continued.*

corolla as in the male; stigmas three to four, shortly two-lobed. *fr.* ovate or sub-globose, eight to twelve-furrowed; flesh sugary, yellow, red, or white. July. *l.* roundish, angular, petiolate. Stem trailing, scabrous, cirrhiferous. Asia, 1570. For special detailed culture, *see* **Melon.**

C. perennis. *See* **Cucurbita perennis.**

C. sativus (cultivated). Common Cucumber. *fl.* on short peduncles, large, usually in threes. July to September. *fr.* generally elongated, smooth or prickly, and usually shining. *l.* cordate, obscurely five-lobed, petiolate; terminal lobe the largest. Stems rough, bearing tendrils. Native place unknown. 1573. Cultivated in all warm countries. For cultivation and list of varieties, *see* **Cucumber.**

FIG. 564. FRUIT OF CUCURBITA MAXIMA COURGERO.

C. s. sikkimensis (Sikkim). *fl.* yellow. July. *fr.* reddish-brown, densely reticulated with pale yellow, large, singular in form, and ripening in July and August. Eastern Himalayas, 1875. This is one of the most remarkable varieties of the common Cucumber known, and was first botanically noticed by Sir Joseph Hooker, in 1848. In its native country, it is sold in the markets, and eaten both raw and cooked. (B. M. 6206.)

Other species are often cultivated, more from their curious fruit than from any particularly ornamental merit; among these are *C. dipsaceus* and *C. metuliferus.*

FIG. 565. CUCURBITA MOSCHATA, showing Leaves, Female and Male Flowers, &c.

CUCURBITA (from *Cucumis*, the Cucumber, and *orbis*, a globe; in allusion to the shape of the fruit). Gourd. ORD. *Cucurbitaceæ.* Half-hardy trailing annuals. Flowers monœcious; corolla yellow, campanulate. Males: calyx hemispherically campanulate; stamens three, one one-celled, two two-celled. Females: calyx obovate-clavate, narrowed towards the top, or campanulate, and always circumcised under the limb after flowering. For culture, &c., *see* **Gourds.**

C. maxima (largest). Large Hollow Gourd or Pumpkin. *fl.*, tube of calyx obovate, ending in a short neck. July. *fr.* yellow, red, or green, globose, somewhat depressed. *l.* cordate, very rugged; petioles hispid. Native country unknown. Cultivated in all warm and temperate parts of the globe.

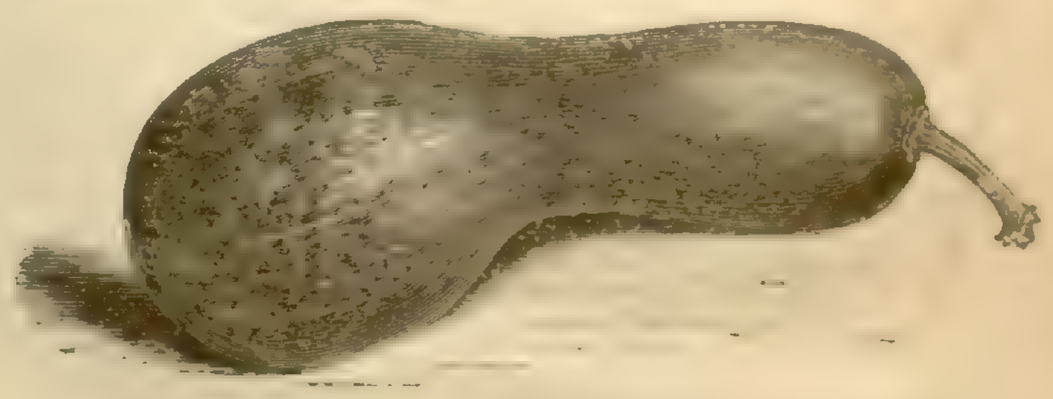

FIG. 566. FRUIT OF CUCURBITA MOSCHATA.

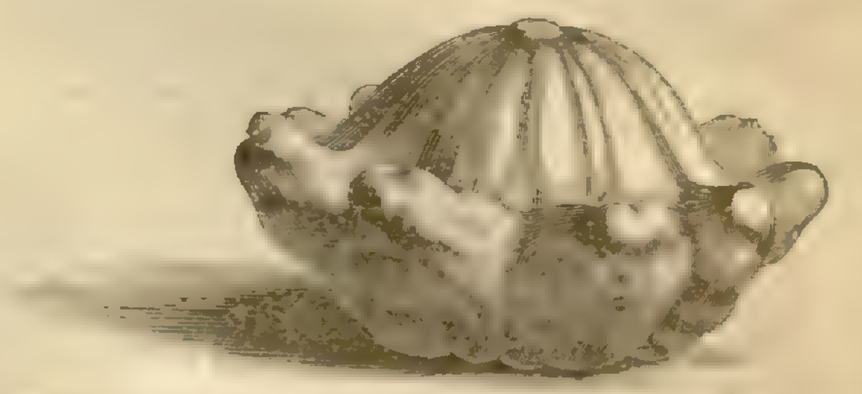

FIG. 567. CUSTARD GOURD (CUCURBITA PEPO VARIETY).

C. m. Courgero (Courgero). *fr.* green or yellow, small, full at

FIG. 568. CUCURBITA PEPO GOURD, showing (1) Leaf, and (2) Male and (3) Female Flowers.

Cucurbita—*continued.*

maturity. *l.* ovate, cordate, three to five-lobed, somewhat cochleate. Stems assurgent, dwarf. See Fig. 564.

C. m. viridis (green). Large Green Gourd. *fr.* green, large, hollow at maturity. Stems very long, climbing.

C. moschata (musky). Musk Melon. *fl.*, calyx hemispherically campanulate, short, having the throat much dilated. May. *fr.* depressed. *l.* cordate, obtuse, somewhat five-lobed, denticulated. Tendrils usually transformed into very imperfect leaves. Native country unknown. 1597. See Figs. 565 and 566.

C. Pepo. Pumpkin. *fl.*, calyx ending in a neck beneath the limb. June to August. *fr.* roundish or oblong, smooth. *l.* cordate, obtuse, somewhat five-lobed, denticulated. Levant, 1570. The Custard Gourd (Fig. 567) is one of the best-known of the very numerous forms of this species, of which there are also roundish and oblong-fruited ones. Fig. 568 represents (1) leaf and (2) male and (3) female flowers of one of the long-fruited varieties.

C. P. aurantia (orange). Orange Gourd. *fl.* yellow. Summer. *fr.* having the appearance and colour of an orange, globose, smooth. *l.* sub-cordate, three-lobed, cuspidate, sharply denticulated. Native country unknown. 1802. Plant very scabrous. There are two or more varieties.

C. P. ovifera (egg-bearing). Egg-bearing Gourd, or Vegetable Marrow. *fl.*, calyx obovate, ending in a short neck, and cut round after flowering to the neck. July to September. *fr.* greenish or yellowish, figure of an egg, obovate or ovate, smooth. *l.* cordate, angular, five-lobed, denticulated, pubescent. Native country unknown. There are grey-fruited, pear-shape-fruited, and subglobose-fruited forms of this species. *See also* **Vegetable Marrow.**

C. P. verrucosa (warted). Warted Gourd. *fr.* roundish-elliptic, warted. *l.* cordate, deeply five-lobed, denticulated; middle lobe narrow at the base. 1658. In America, this is commonly grown for culinary purposes, but in England chiefly as a curiosity.

C. perennis (perennial). *fl.* about the size of *C. Pepo*; lobes of calyx subulate. *fr.* nearly sessile, orbicular, smooth, usually four-celled. *l.* triangularly cordate, with undulated margins. Tendrils trichotomous. Native place doubtful. SYN. *Cucumis perennis.*

CUCURBITACEÆ. A large order of succulent climbing plants, with solitary lateral tendrils. Flowers solitary, panicled, or in fascicles, monœcious or dicœcious; corolla of five (rarely three or six) petals, sometimes fringed, with strongly-marked reticulated veins. Fruit fleshy, more or less succulent. Leaves alternate, petiolate, palmate or pedate, often cordate, succulent, rough. There are about seventy genera (including *Bryonia*, *Cucumis*, *Cucurbita*, and *Trichosanthes*) and about 470 species.

CULCASIA (from *Kulkas*, the Arabic name for *Colocasia antiquorum*, a plant of the same family). SYN. *Denhamia.* ORD. *Araceæ.* Stove evergreen climbers, allied to **Philodendron** (which *see* for culture, &c.).

C. scandens (climbing). *fl.*, spathe whitish-brown; sheaths petiolar, long, equal to the scape. June. *l.* ovate-lanceolate, acuminate. Stem twining, suffrutescent. West Africa, 1822.

CULM. The straw or stem of grasses.

CULTRATE, CULTRIFORM. Shaped like a pruning-knife.

CULVER'S PHYSIC. *See* **Veronica virginica.**

CUMINGIA CAMPANULATA. *See* **Conanthera campanulata.**

CUNEATE, CUNEIFORM. Wedge-shaped; the broadest end uppermost, tapering to the base.

CUNILA (an ancient Latin name, of unknown origin). ORD. *Labiatæ.* A genus containing about twelve species of herbs or sub-shrubs, natives, for the most part, of North America. Flowers white or purplish, small; corolla two-lipped, with the upper lip erect, flattish, mostly notched, and the lower somewhat equally three-cleft; calyx ovate-tubular, equally five-toothed, and hairy in the throat. Leaves large, dentate. *C. mariana* is perhaps the only species yet introduced to cultivation. It is a hardy perennial, thriving in a loam and peat soil. Increased by root division.

C. mariana (Maryland). Common Dittany. *fl.* purplish; cymes peduncled; calyx striated. July to September. *l.* smooth, ovate, serrate, rounded or heart-shaped at the base, nearly sessile, dotted, 1in. long. Stems tufted, corymbosely much-branched. *h.* 1ft. South New York to Ohio, Illinois, and southward. (S. B. F. G. 243.)

FIG. 569. CUNONIA CAPENSIS.

CUNNINGHAMIA (named after J. and A. Cunningham, two celebrated botanical collectors, the former being the discoverer of this conifer). Broad-leaved China Fir. ORD. *Coniferæ.* An evergreen tree, not hardy except in very favoured spots. It is too large to be allowed space in the greenhouse, and, when grown in the open, it is almost invariably disfigured by the violence of winds and frost. With these impediments of primary importance, the tree will never become largely grown; it has, however, been frequently seen doing well. Cunninghamia requires

Cunninghamia—*continued.*

a well-drained light soil, and is best propagated from seeds, as cuttings rarely make good plants.

C. sinensis (Chinese).* *fl.*, males in grouped catkins, which are terminal, fascicled, cylindrical, and about 1in. long; females with three ovules. *cones* about the size of a walnut, sessile, drooping, globose, smooth; scales ovate-acuminate, coriaceous, sharply denticulated on the margin. *l.* sessile, deflexed, spreading in every direction, 1½in. long, lanceolate, much pointed, rigid, flat, entire, somewhat scabrous on the margin. Branches for the most part verticillate, spreading horizontally. Trunk straight, cylindrical. *h.* 40ft. to 50ft. (much less in Europe). China, 1804. (B. M. 2743, under name of *C. lanceolata*.)

CUNONIA (named after John Christian Cuno, of Amsterdam, who described his own garden in verse, in 1750). TRIBE *Cunonieæ* of ORD. *Saxifrageæ*. A greenhouse tree. Flowers disposed in axillary racemes; calyx five-parted; petals five, oblong; stamens ten. Fruit a two-celled capsule. Leaves impari-pinnate; leaflets serrated, coriaceous; stipules large, caducous, interpetiolar. It is of easy culture in sandy loam and peat. Half-ripened cuttings will root, if inserted in sandy soil, and placed under glass, in a very gentle heat.

C. capensis (Cape Colony). *fl.* white; racemes spicate, opposite; pedicels numerous, in fascicles. August. *l.*, leaflets five to seven, lanceolate. *h.* 10ft. to 50ft. Cape of Good Hope, 1816. A large shrub or middle-sized tree, glabrous in all its parts. See Fig. 569. (L. B. C. 826.)

CUNONIEÆ. A tribe of *Saxifrageæ*.

CUP. The same as **Corona** (which *see*).

CUPANIA (named after Father Francis Cupani, an Italian monk, author of "Hortus Catholicus," and other botanical works; he died in 1710). ORD. *Sapindaceæ*. Ornamental stove trees or shrubs. Flowers whitish, in panicles or racemes. Leaves exstipulate, abruptly pinnate, or from abortion simple; leaflets opposite and alternate. The species number about thirty; they are found in tropical regions throughout the world. They thrive in a compost of loam and peat. Cuttings of half-ripe shoots will root in sand, if placed under a hand glass, in heat. Very few species of this rather large genus are seen in cultivation.

C. americana (American).* *fl.*, petals yellowish, triangular, hairy on the outside. *l.*, leaflets three to four pairs, obovate, retuse, clothed with fine rusty tomentum beneath, serrate-toothed at the top of the lateral; outer leaflets largest. *h.* 30ft. South America, 1818. SYN. *C. tomentosa*.

C. sapida (savoury). Savoury Akee-tree. *fl.* whitish. March. *l.*, leaflets three or four pairs, ovate-lanceolate, veiny. *h.* 30ft. West Africa, 1793. Naturalised in West Indies.

C. tomentosa (tomentose). A synonym of *C. americana*.

CUPHEA (from *kyphos*, curved; in reference to the form of the capsule). ORD. *Lythraceæ*. Very pretty greenhouse herbs or sub-shrubs. Flowers usually drooping; calyx tubular, coloured; peduncles interpetiolar, one or many-flowered. Leaves opposite, rarely in whorls, quite entire. Only a few of the numerous species are generally grown. Cuttings of the perennial sorts strike freely in March or April, if placed in brisk bottom heat; but by far the better method is to sow seed, in January or February, and grow the seedlings on in rich soil, repotting when necessary. Most of the dwarf species will succeed if finally placed in 6in. pots, and fed with liquid manure when these are filled with roots. Cupheas are of easy culture, and a few, particularly *C. ignea*, propagated from cuttings, are well adapted for greenhouse decoration, or for small beds in the flower garden in summer.

C. æquipetala (equal-petalled). *fl.* purple. June. *h.* 2ft. Mexico, 1859. SYN. *C. ocimoides*.

C. cinnabarina (cinnabar). A synonym of *C. pinetorum*.

C. cyanea (blue). *fl.* yellow and red, alternate. July. *l.* ovate-oblong, acute, rounded at the base. Branches and calyces clammy and hispid. Andes. Evergreen. SYN. *C. strigillosa*. (B. R. 32, 14.)

C. Hookeriana (Hooker's). *fl.* vermilion and orange, curved, cylindrical, disposed in dense panicles. *l.* lanceolate. *h.* 2ft. to 3ft. Mexico, 1877. A novel and striking under-shrub. SYN. *C. Roezlii*. (R. H. 1877, 469.)

Cuphea—*continued.*

C. ignea (fiery). *fl.* bright scarlet, apetalous, with a black and white expanded limb. Summer. *l.* nearly glabrous, lanceolate. *h.* 1ft. Mexico, 1845. Evergreen. SYN. *C. platycentra*. (F. d. S. 180.)

C. jorullensis (Jorullan). *fl.* red; pedicels one to three together, alternate, racemose at the tops of the branches; calyx clammy. Summer. *l.* oblong-lanceolate, acute, on very short petioles, rounded at the base. Branches compressed, clothed with pubescence. *h.* 2ft. Mexico, 1856. Evergreen.

C. lanceolata (lance-shaped). *fl.* bluish, sub-spicate, sub-secund. July. *l.* opposite, oblong-lanceolate, obtuse, hairy. *h.* 1½ft. Mexico, 1836. Plant ascending, clammy, hispid from brown hairs. Annual. Evergreen. SYN. *C. silenoides*. (B. M. 4362.)

C. Melvilla (Melvilla). *fl.*, calyx red at the base, and green at the apex, long; racemes terminal, simple, many flowered. May. *l.* sessile, lanceolate, attenuated at both ends. *h.* 2ft. to 3ft. Guiana, 1823. Herbaceous perennial. (B. R. 852.)

C. miniata (vermilion). *fl.* pale vermilion, solitary, axillary, on short pedicels. June to September. *l.* ovate-acuminate, covered with white bristles. *h.* 2ft. Mexico, 1843. Evergreen. (F. d. S. 65.)

C. ocimoides (Basil-like). A synonym of *C. æquipetala*.

C. pinetorum (pine-wood-loving). *fl.* crimson or deep purple, panicled. July. *l.* nearly sessile, ovate-lanceolate, strigose. Branches ascending. *h.* 1½ft. Mexico, 1850. Evergreen. SYN. *C. cinnabarina*. (F. d. S. 527.)

C. platycentra (broad-centred). A synonym of *C. ignea*.

C. procumbens (procumbent). *fl.*, petals rose-coloured; sepals purplish; pedicellate, solitary, deflexed. June. *l.* opposite, shortly petiolate, ovate-lanceolate. Branches procumbent. Mexico, 1816. Stove annual. (B. R. 182.)

C. Roezlii (Roezl's). A synonym of *C. Hookeriana*.

C. silenoides (Silene-like). A synonym of *C. lanceolata*.

C. strigillosa (coarse-haired). A synonym of *C. cyanea*.

C. Zimapani (Zimapani's). *fl.* blackish-purple, purple. Autumn. *h.* 2ft. Mexico, 1878. Evergreen. (B. M. 6412, under name of *C. lanceolata*.)

CUPRESSUS (from *kuo*, to produce, and *parisos*, equal; in reference to the symmetrical growth of *C. sempervirens*). Cypress. ORD. *Coniferæ*. Very ornamental evergreen shrubs or trees. Flowers monœcious. Fruit globular, composed of peltate ligneous persistent scales,

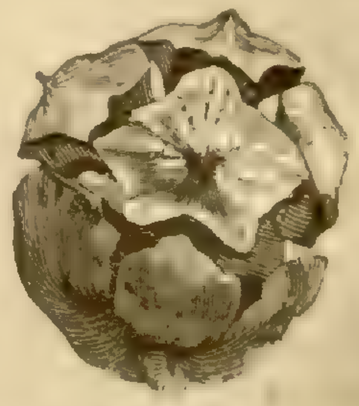

FIG. 570. CUPRESSUS CONE, with the Scales separating.

separating at maturity (see Fig. 570), to free the usually numerous slightly-winged seeds. Leaves minute, scale-like, imbricate, or linear-acute, spreading. Few of the whole genus are really hardy; the remainder are liable to be much damaged by severe frosts and fierce winds. In the South and West of England and Ireland, they, as a rule, thrive very well. Any common garden soil suits the hardy sorts, but they succeed best in a rather deep soil, and in a sheltered situation. They may be propagated either by cuttings or by seeds. The latter may be easily collected when the matured cones burst open in early spring, and should be sown in April, in a warm friable soil. The seedlings will appear before the end of May. After the first year's growth, the young plants should be transplanted into rows, and removed again every second year, with the view of causing their roots to become fibrous and bushy. Nurserymen are in the habit of shifting them into pots of increasing size.

C. californica (Californian). A synonym of *C. Goveniana*.

C. cashmeriana (Cashmere). A synonym of *C. torulosa*.

C. elegans (elegant). A synonym of *C. Knightiana*.

C. funebris (funereal).* *l.* yellowish-green, scale-like, closely appressed, imbricated. Branches horizontal when matured, becoming pendulous at their extremities, giving the whole tree a very graceful, weeping appearance. *h.* 50ft. North-east China. 1849. Half-hardy. SYN. *C. pendula*. (F. d. S. vi. 89.)

C. glandulosa (glandular). A synonym of *C. MacNabiana*.

C. glauca (grey). A synonym of *C. lusitanica*.

Cupressus—*continued.*

C. Goveniana (Gowen's).* *fl.*, male catkins yellow, very numerously produced in spring. *l.* scale-like, closely imbricated, bright green. Branches spreading, with numerous, irregularly disposed, slender branchlets. *h.* 15ft. to 20ft. California, 1846. A dwarf shrub, having a dense habit. SYNS. *C. californica* and *C. Hartwegii.*

C. Hartwegii (Hartweg's). A synonym of *C. Goveniana.*

C. Knightiana (Knight's).* A very rare tall tree, of elegant habit, described by Messrs. Veitch as "with drooping, feathery, and fern-like branchlets, and well distinguished by the glaucous, bluish hue of its foliage." It is the hardiest of Mexican Cypresses, but requires, in this country, a sheltered situation. *h.* 40ft. to 60ft. Mexico, 1838. SYNS. *C. elegans* and *C. Lindleyana.*

C. Lambertiana (Lambert's). A synonym of *C. macrocarpa.*

C. Lawsoniana. *See* **Chamæcyparis Lawsoniana.**

C. Lindleyi (Lindley's). A synonym of *C. Knightiana.*

C. lusitanica (Portugal).* Cedar of Goa. *l.* imbricated in four rows, acute, keeled, glaucous, adpressed. Branches flexuose, spreading; branchlets numerous, incurved, scattered. *h.* 40ft. to 50ft. Goa, 1683. A very handsome low tree, but only half-hardy. SYN. *C. glauca.*

C. MacNabiana (MacNab's).* *l.* small, scale-like, arranged in four rows, deep green. Branches short, thickly set; branchlets numerous, rigid. *h.* 10ft. to 15ft. North California, 1853. A densely branched, hardy shrub, with a pyramidal outline. SYNS. *C. glandulosa* and *C. nivalis.*

FIG. 571. FRUITING BRANCH OF MONTEREY CYPRESS (CUPRESSUS MACROCARPA).

C. macrocarpa (large-fruited).* Monterey Cypress. *l.* very dark green, closely imbricated. Branches numerous, close set, horizontal, with the extremities ascending; secondary branches generally lateral and opposite. *h.* 50ft. to 60ft. South California, 1847. A hardy, medium-sized tree, of great beauty, and of extremely rapid growth. See Fig. 571. SYN. *C. Lambertiana.*

C. nepalensis (Nepaul). A synonym of *C. torulosa.*

C. nivalis (snowy). A synonym of *C. MacNabiana.*

C. pendula (pendulous). A synonym of *C. funebris.*

C. sempervirens (evergreen).* "This is the fastigiate or upright kind—a tall, tapering tree, with erect branches growing close

Cupressus—*continued.*

to the trunk, and with frond-like branchlets covered with smooth, imbricated, yellowish-green leaves. The cones are about 1in. in diameter, and are generally produced in pairs." *h.* 6ft. to 100ft. South Europe, 1548. Hardy in the South of England, and probably in many other places in Britain. The following names have been applied by various authorities to forms of this species: *horizontalis, indica.*

C. torulosa (twisted).* *l.* glaucous, appressed to the stem, thin, minute, very smooth, closely imbricated in four rows. Branches short, ascending, much ramified at their extremities; branchlets slender, short, twisted. *h.* 50ft. to 70ft. Himalayas, 1824. A very beautiful pyramidal, hardy, much-branched tree. SYNS. *C. cashmeriana* and *C. nepalensis.* The variety *Corneyana* is a low tree, with slender drooping branchlets, and comes extremely close to the type.

CUPULA. The cup of an acorn, or other similar fruit.

CUPULAR, CUPULIFORM. Shaped like a cup.

CUPULIFERÆ. A very important natural order of trees and shrubs. Flowers monœcious. Male solitary, crowded, or in spikes, bracteate; sepals unequal, one to five or more, or absent; stamens two to twenty on a disk, or adnate to the bases of the sepals; anthers two-celled. Female: calyx adnate to the ovary, or absent; ovary inferior, after fertilisation more or less completely two to three (rarely four to six) celled; styles stigmatose above and within. Fruit indehiscent, seated on, or inclosed within, the hardened accrescent bracts. There are ten genera, and about 400 species. They are principally confined to the temperate regions of the Northern hemisphere, but some are found in New Zealand, Chili, and the mountains of Java, Borneo, South Australia, &c.

CURATELLA (from *curatus*, worked; the leaves, which have a rough surface, are employed in Guiana for polishing bows, sabres, and other weapons). ORD. *Dilleniaceæ.* A genus containing a couple of species of very ornamental dwarf stove evergreen shrubs, with white flowers, winged petioles, and ovate rough leaves. They thrive in a compost of loam and peat. Ripened cuttings will root freely if planted in a pot of sand, with a hand glass placed over them, in heat. Probably the only one in cultivation is the following:

C. americana (American).* *fl.* white; racemes issuing from the adult branches. *l.* ovate, repand, and somewhat denticulated, very rough, running along the petiole at the base. *h.* 10ft. South America. The bark of this shrub is thick, wrinkled, and cracked, and falls off in large pieces.

CURCULIGO (from *curculio*, a weevil; the seeds have a point like the beak of a weevil). Weevil Plant. ORD. *Amaryllideæ.* Of this genus, the only plants worthy of general cultivation are *C. recurvata* and its variegated forms. These are very ornamental stove foliage plants, of palm-like growth. Their culture is easy; they thrive in a compost of peat and loam, in equal parts, and used in moderate-sized lumps, with a fair proportion of silver sand. The drainage must be perfect. Propagation is effected by suckers, which form at the base of the stem.

C. recurvata (recurved).* *fl.* yellow, produced in dense heads, on scapes shorter than the leafstalks. *l.* spreading, recurved, lanceolate, longitudinally plaited, dark green; petioles long, erect. East Indies. (B. R. 770.)

C. r. striata (striped).* *l.* marked with a distinct and effective central band of pure white; petioles whitish at the back.

C. r. variegata (variegated).* *l.* recurved, plaited, oblong-lanceolate, upwards of 2ft. long and 6in. broad, bright green, beautifully banded longitudinally with stripes of clear white; petiole 1½ft. long. Rhizome tuberous. East Indies. A very handsome variegated plant.

CURCULIO. *See* **Weevils.**

CURCUMA (from *Kurkum*, its Arabic name). Turmeric. ORD. *Scitamineæ.* A genus of above thirty interesting stove herbaceous plants. Flowers in spikes, with concave bracts; calyx tubular, three-toothed; tube of corolla dilated above, five lobes equal, lip larger and spreading; filament petaloid, three-lobed at the top, with a two-spurred anther on the middle lobe. They do well in a

Curcuma—*continued.*

compost of loam and peat, in proportions of two-thirds of the latter to one of the former, to which may be added a little sand. Propagated by root divisions.

C. albiflora (white-flowered).* *fl.* white, yellow. July. *l.* long-stalked, glabrous, somewhat plaited parallel to the nerves, deep green above, paler beneath. *h.* 2ft. Ceylon, 1862. (B. M. 5909.)

C. australasica (Australian).* *fl.* yellow; spikes many-flowered; upper bracts rose-coloured, forming a pretty crown to the inflorescence. *l.* oblong-lanceolate, light green. Australia, 1867. (B. M. 5620.)

C. cordata (heart-shaped).* *fl.* reddish-yellow; spikes central; bracts ovate-obtuse; tuft at top of spike violaceous. July. *l.* ovate-cordate, acuminate, clothed with silky hairs. *h.* 1ft. East Indies, 1846. (B. M. 4435.)

C. elata (tall). *fl.* crimson; spikes lateral. May. *l.* sessile, villous beneath, green. *h.* 3ft. East Indies, 1819.

C. leucorhiza (white-rooted). *fl.* reddish-yellow; spikes lateral, few-flowered, comose. May. *l.* smooth, pure green. *h.* 1ft. East Indies, 1819.

C. longa (long). *fl.*, spikes central. August. *l.* long-stalked, broad, green. *h.* 2ft. East Indies, 1759. (B. M. Pl. 269.)

C. petiolata (petiolate).* *fl.* pale yellow; spikes 5in. or 6in. long, on a stout peduncle; bracts rosy-purple, shortly ovate. September. *l.* rather large, oblong-lanceolate, acuminate, cordate at the base. *h.* 1½ft. Pegu, 1869. (B. M. 5821.)

C. Roscoeana (Roscoe's).* *fl.* scarlet; bracts bright orange; spike nearly 1ft. long. August. *l.* large, oblong, about 1½ft. across. *h.* 1ft. East Indies, 1837. A very handsome species. (B. M. 4667.)

C. rubricaulis (red-stemmed).* *fl.* red; spikes lateral. May. *l.* stalked, oblong, with red sheaths. *h.* 1ft. East Indies, 1822.

C. Zedoaria (Zedoary). *fl.* red; spikes lateral. April to August. *l.* broad, sessile, silky beneath. *h.* 3ft. East Indies, 1797. (B. M. 1546.)

CURMERIA. Included under **Homalomena.**

CURRANT (*Ribes*). There are three distinct types of Currants in cultivation—the Red (see Fig. 572), obtained

FIG. 572. FRUITING BRANCH OF RED CURRANT.

from *Ribes rubrum*; the White, a variety of the same species; and the Black (*R. nigrum*). Both species are either natives of Britain, or have been introduced from some other part of Europe at a period unknown. The fruit of the Red Currant is largely used for tarts; it is also preserved in the form of jelly, or mixed with raspberries for jam. The White is generally less acid, and is more used for dessert, with a few Red ones intermixed. Black Currants are almost wholly utilised for cooking and preserving, and are supposed to possess medicinal properties not found in either of the others. The trees grow in almost any position, and the crop is often a remunerative one to cottagers, particularly near large towns, and also to market gardeners. Currants are in great demand in private gardens; and, in this case, if the trees are planted in different positions, and protected, the fruiting season may be considerably prolonged.

Currant—*continued.*

Propagation. Currants may be propagated by seeds, cuttings, layers, or suckers; and, in special cases, grafting may be employed, using suckers or gross-growing seedlings for stocks. Seeds are only sown for raising new varieties, but as the chances of obtaining improvements on those sorts already existing, are extremely doubtful, this method is but little adopted. Suckers are objectionable, as they are often gross-growing and not free-fruiting; they are also very liable to reproduce suckers. Layers root easily if the trees are dwarf and the shoots can be brought to the ground in order to be pegged down; but this mode is seldom used, and is not here recommended. Propagation by cuttings is the best and most generally practised plan. These should consist of strong well-ripened young shoots, taken off close to the old wood if possible. If a length of from 12in. to 15in. can be procured, the cuttings should be placed 6in. in the ground, first carefully removing the whole of the eyes in this part, and also from some part of the wood above ground, so as to form a stem. The earlier they are taken in autumn after the wood is matured, and inserted, the better; but if this is not practicable, any time when the ground is suitable, up till the end of February, will be tolerably safe. The best method of putting in cuttings is to dig a trench of suitable depth, somewhat vertically, and place them about 6in. apart, afterwards filling in and treading firmly. A space of 1ft. should be allowed between the lines, and each other line proceeded with in the same way after the first one is finished.

Soil and Site. Being vigorous root-producing plants, Currants do best in good rich loam, 2ft. or more in depth, rather heavy than otherwise, so as to retain moisture. In dry seasons, if they are growing in light soil and are not kept watered, the fruit shrivels or ripens prematurely, being in either case inferior. Any fairly good soil will grow Currants of moderate quality; but for large crops and fine fruit, the conditions above mentioned are the best. Manure water, applied when the fruit is swelling, will increase the size, but often affects the flavour. Established trees should have a good annual dressing of farmyard manure or cowdung after the winter pruning, removing a little of the soil round the trees and placing the manure in, afterwards covering it with the soil. Red and White Currants are often cultivated on the back walls of lean-to glass houses, or other similar positions, in order to prolong the season of fruit supply as much as possible; but the crop from such trees can hardly be expected to have the flavour of that more exposed to the sun. The bush form is invariably adopted for Black Currants, and for the main crop of the Red. A space of 5ft. or 6ft. must be allowed between the trees in the open quarters, and a south aspect should be avoided, especially in light soils. Bush trees, 3ft. high and as much in diameter, are sometimes grown alternately with pyramid Apple or Pear trees, by the sides of walks: and Currants trained as pyramids are also well adapted for such positions. The earlier the planting can be done in autumn, after the leaves are off, the better, as new roots are then formed at once, and a crop secured the following season, presuming the plants are large enough.

Pruning and Training. For covering walls, a good plan is to place young plants 3ft. apart, selecting the three strongest shoots, and training one of them upright in the centre, and the other two equidistant on either side, thus placing all the main shoots 1ft. apart. Cut back if at all weak, allowing them in course of time to reach the desired height, and occasionally shorten all the laterals. Bush trees should have a clean stem of 6in. or more at the bottom, and from six to twelve main shoots, according to the size of bush intended to be grown. Occasionally, pyramids are formed by training one strong shoot to a good height, shortening it each year, to insure the production of spurs for fruiting. When trained in this way, Currants have a fine effect, and are almost certain to produce good crops, which have the advantage of being kept

Currant—*continued.*

free from dirt, while those on bushes are often made very muddy by heavy storms. A large quantity of wood is made in summer, and this should be thinned and shortened, but not too severely, about the beginning of July. This will materially assist in ripening the fruit, by admitting more light, and also help to ripen the other wood. The winter pruning will consist in shortening the main shoots, where they have not attained the desired height, to about 6in., and cutting all the young wood on the spurs nearly close in. This process applies chiefly to Red and White Currants. The Black varieties require different treatment, as in this case the fruit is produced on the wood of the previous year. Thinning out the old wood, and annually renewing with young, is the plan to be adopted. The leading growths will require but little stopping after the plants are in bearing condition; but any strong or misplaced shoots should be removed. Black Currants should not be trained to fruit on spurs like the others, but they may be made to do so by subjecting them to the same system of pruning. The fruit for all purposes should be gathered, if possible, when dry. When required for preserving, it is better, if the weather is suitable, to wait several dry days before gathering. If for dessert, it is best gathered from the plants in fine weather as required. The trees should be carefully netted, without leaving any open spaces, or the birds will be sure to find them.

Insects, &c. Currants are subject to the ravages of all the caterpillars that prove so destructive to the Gooseberry, the trees being often entirely defoliated, excepting the petioles of the leaves. Hand-picking should be vigorously pursued as soon as any are detected, and the plants should be watered with an infusion of Hellebore leaves. Other caterpillars feed in the interior of the branches in spring, causing them to die away. The parts affected should be removed, and burned. Aphides are often found in large numbers on the points of the shoots; it is best to cut off and destroy these, or the insects will fall on the fruit, rendering it dirty and useless. Blackbirds and thrushes are the most destructive amongst birds as soon as the fruit is ripe. Carefully netting the plants is the only efficient protection, and this is always necessary if the fruit is to hang late for dessert.

Sorts. Names of Currants are very numerous, but the distinct varieties are somewhat limited, a great many being either synonyms or insufficiently distinct. The following are amongst the best in cultivation:

Black. BLACK NAPLES, large and good, but, being early in leaf, the fruit is sometimes liable to suffer from spring frosts, this is an old variety, well proved to be good for general cultivation; LEE'S PROLIFIC, distinct and comparatively new, the bunches are large, and the berries even larger than Black Naples, very sweet, and abundantly produced, an excellent black variety; OGDEN'S BLACK GRAPE, large and fine, very prolific; SWEET-FRUITED, a small sort, but little known, the fruit hangs longer on the trees, if protected, than most other Black varieties.

Red. CHERRY, a large, deep red, early Currant; HOUGHTON SEEDLING (Syn. *Houghton Castle*), a free-fruiting late variety, berries deep red, and very acid; KNIGHT'S LARGE RED (Syn. *Goliath*), berries bright red, bunches very large, and an abundant bearer; LA FERTILE, very prolific, large and good; LA HATIVE, a large, early, free-fruiting variety; MAMMOTH, one of the largest and best; RABY CASTLE, bunches long and large, berries bright red, with a sharp acidity, an abundant-fruiting late variety that hangs well; RED CHAMPAGNE, a very prolific variety, of a pale pink or flesh-colour, midway in flavour between the Red and White sorts; RED DUTCH, one of the best and most productive, and probably the one most cultivated, it ripens early, the berries are large, juicy, and of excellent quality; WARNER'S GRAPE, a good variety, with large bunches and berries.

White. WHITE DUTCH, this is the best of the White Currants, the plants have a dwarf, bushy habit, like the Red Dutch, the bunches and berries are large and freely produced, and of a mild, sweet flavour; WILMOT'S LARGE WHITE, a distinct variety, and a good cropper, but not so much grown as White Dutch.

CURRANT CATERPILLARS. *See* **Currant Clear-wing Moth, Gooseberry and Currant Sawfly, and Gooseberry or Magpie Moth.**

CURRANT CLEAR-WING MOTH (*Sesia tipuliformis*). This moth expands to about ¾in. The wings are clear, except the veins, a border round the hind wings, the tip, and a spot in the centre of each of the fore wings, which are blackish. The antennæ are black, and are thickened towards the points. The body is black, with three fine yellow bands. The legs are black and yellow.

FIG. 573. CATERPILLAR OF CURRANT CLEAR-WING MOTH (SESIA TIPULIFORMIS).

These moths appear in July, and fly only when the sun shines. The larvæ (see Fig. 573) live inside the stems of Currant-bushes, and their presence is indicated by the drooping, sickly appearance of the leaves above the points attacked. The infested branches should be cut off and destroyed.

CURRANT, FLOWERING. *See* **Ribes sanguineum.**

CURRANT SAWFLY. *See* **Gooseberry and Currant Sawfly.**

CURTISIA (named after William Curtis, a celebrated English botanist, who founded the "Botanical Magazine"). Assagay-tree. ORD. *Cornaceæ*. A fine greenhouse tree. Calyx four-partite; petals four, oblong, valvate; stamens alternating with the petals. Fruit a small obovoid four (rarely three) celled drupe. It thrives in a compost of sandy loam and peat. Half-ripened cuttings will root in sandy soil, if placed under a hand glass, in gentle heat.

C. faginea (Beech-like). *fl.* pale, small, very numerous, in terminal, trichotomous, much-branched panicles. June and July. *l.* opposite, broadly ovate, toothed, shining above, ferruginous beneath. *h.* 20ft. to 40ft. Cape of Good Hope, 1775. The wood is solid, extremely tough, heavy, close-grained, very durable, and resembles plain mahogany.

CUSCUTA (etymology very doubtful). Dodder. SYN. *Pfeifferia*. ORD. *Convolvulaceæ*. Leafless, twining, parasitic herbs. Flowers in bracteate heads, rarely spicate; corolla urceolate or campanulate; limb five, rarely four-cleft, marcescent. The stalks twine contrary to the sun's apparent motion, sending out a number of little vesicles, which attach themselves to the supporting plant. The flowers of many species are extremely pretty and interesting, and, in some cases, very fragrant; but, from the peculiar habit of the plants, they will never become popular. All may be grown by simply sowing the seed with those of the plants they most affect, though some thrive on almost any plant. The following are the best:—STOVE: *americana*, *Hookeri*, *odorata*, and *verrucosa*. GREENHOUSE: *australis*, *chilensis*, *monogyna*, and *reflexa*. HARDY: *macrocarpa*, *Epilinum*, *Epithymum*, *europæa*, and *Trifolii*. The last four are British plants.

CUSCUTACEÆ. A group of leafless, parasitic, twining herbs, forming a division of *Convolvulaceæ*.

CUSHION PINK. *See* **Silene acaulis.**

CUSPIDARIA. Included under **Tænitis** (which *see*).

CUSPIDATE. When a leaf, &c., is suddenly narrowed at the top, and then more or less prolonged into an acumen or point.

CUSSONIA (named after Peter Cusson, 1727-1785, Jesuit and physician, a Professor of Botany in the University of Montpelier; his writings were principally on umbelliferous plants). ORD. *Araliaceæ*. A genus containing about a dozen species of greenhouse evergreen shrubs, natives of Eastern tropical and Southern Africa and the Mascarene Islands. Flowers greenish. Leaves glabrous, petiolate, palmate, with five to nine one-nerved, entire or lobed leaflets. Trunks thick, rather succulent. For culture, *see* **Argyreia.**

C. spicata (spiked). *fl.* spirally disposed along the rachis of the spike in five or six series. *l.* palmate; leaflets petiolate, variously and acutely cut, often trifid at the apex. *h.* 6ft. to 10ft. Cape of Good Hope, 1789.

C. thyrsiflora (thyrse-flowered). *fl.* racemose, pedicellate along the rachis. *l.* palmate; leaflets sessile, cuneiform, obtuse, truncate, tridentate. *h.* 6ft. to 12ft. Cape of Good Hope, 1795.

CUSTARD APPLE. *See* **Anona.**

CUTICLE. The outer pellicle of the epidermis.

CUTTING-IN. A term applied to the shortening of branches in shrubs and trees.

Cuttings—*continued.*

shoots that may be removed with a heel attached are often to be preferred. Roots are formed, in the majority of cases, at the node or joint only, and the incision should

FIG. 575. SOFT-WOODED CUTTING, VERBENA.

be made immediately below. See Fig. 574. Some plants, however, emit roots at any part of the stem that may be of suitable texture, and these may be cut as shown at Fig. 575. All Cuttings should be selected from healthy plants, and all or the greater part of their leaves retained. It is very important, when inserting, that the base should be placed in contact with the soil; and a layer of sand on the top tends to hold all firmly, until roots are

FIG. 574. SOFT-WOODED CUTTINGS PREPARED FOR INSERTING.

CUTTINGS. These are portions of a plant, usually the shoots, that are entirely detached, and may, or may not, be used for propagating purposes. A very large number of plants are kept true to character, and rapidly increased, by means of Cuttings. The perpetuation of distinct varieties that may have been obtained from seed, or from fixed sports, is often restricted to the same mode of propagation, as seed from these can seldom be depended on to reproduce the characters of the parent. Certain seasons and selected Cuttings are necessary to insure success with many plants; but with others the season is a matter of little importance, so long as other conditions are suitable. As a rule, these conditions vary very considerably. Cuttings of most soft-wooded plants require a higher temperature, and invariably a much closer atmosphere, than that in which they grow when established, to induce a speedy formation of roots, and, in the meantime, prevent an undue evaporation of moisture. Many hard-wooded exotics also require similar treatment, but in a lesser degree; while others that are hardier, and inserted when the wood is firm and growth inactive, require a longer time to form roots, and consequently a steadier temperature. Soft-wooded plants, to supply Cuttings in spring, should be placed in a little heat, to cause active growth, before they are inserted. Those of firmer growth are best when partially ripened, and side formed. *Coniferæ*, and hardy deciduous trees and shrubs, can generally be propagated by Cuttings. These are

FIG. 576. HARD-WOODED CUTTING, EUONYMUS JAPONICUS.

best prepared from the terminal shoot of a branch, as represented in Fig. 576, and inserted in early autumn, when

Cuttings—*continued.*

growth ceases, and the flow of sap is consequently less rapid. The length and size of Cuttings greatly depend on the variety of plant, those which are of medium growth, neither too sappy nor, on the other hand, too hard, being invariably preferred. Experience will alone teach the proper season, and the most successful method and suitable situation, for propagating by this method in different places, according to the various requirements of the plants to be increased, and the means at command for so doing. Shading, in spring and summer, is necessary in all cases, with tender Cuttings under glass, until they have formed roots.

Leaf Cuttings. Some plants may be increased by the insertion of a leaf with bud attached to the base. In the case of ornamental-leaved Begonias, Gloxinias, and others, young plants are obtained by the formation of bulbs on the petioles and midribs of the leaves, without the presence of an eye or bud. Cotyledons, and some other succulents, may be readily increased from leaves.

Root Cuttings refer to roots that ultimately form plants when cut in pieces and inserted in soil. This is a quick mode of propagating such plants as succeed. Clerodendrons and show Pelargoniums, amongst others, may be cited as examples.

For further information on Cuttings, *see* **Propagation.**

CYANANTHUS (from *kyanos*, blue, and *anthos*, a flower). ORD. *Campanulaceæ.* A small genus (six species) of brilliant-flowered alpine herbaceous perennials, of procumbent habit. They should be grown on rockwork, where their stems can nestle between the stones, and the roots find plenty of moisture, as in a dip or hollowed part, semi-shaded. The long and fleshy roots delight to run amongst damp leaf mould and sand. Cuttings may be taken during spring or early summer, and struck in sandy peat, kept moist; or strong roots may be carefully divided, in spring; the latter method, however, is the least desirable.

FIG. 577. CYANANTHUS INCANUS, showing Flowering Branch, and detached Flower from which Calyx and Corolla have been removed, in order to show Ovary crowned with the rayed Stigma, and surrounded by the Stamens at the base.

C. incanus (hoary). *fl.* soft azure-blue, terminal, 1in. to 1½in. long, ½in. to 1in. across the corolla tube; limb segments oblong, spreading; throat lined with soft, white hairs. August. *l.* oval, slightly lobed, covered with soft white hairs. *h.* 3in. to 4in. Alpine Sikkim. This is a much rarer plant than *C. lobatus*, and rather more delicate. See Fig. 577.

C. lobatus (lobed). *fl.* bright purple-blue, few, solitary, usually terminal, about 1in. in diameter, funnel-shaped, with five tongue-shaped reflexed segments; throat covered with numerous soft, long, whitish hairs; calyx large, thickly set with short blackish hairs. August and September. *l.* small, fleshy, alternate, wedge-shaped, obovate, lobed. *h.* 4in. Alpine Himalayas, 1844. See Fig. 578. (B. M. 6485.)

Cyananthus—*continued.*

FIG. 578. CYANANTHUS LOBATUS.

CYANELLA (from the diminutive of *kyanos*, blue). ORD. *Liliaceæ.* Pretty little bulbous plants, from the Cape of Good Hope. Perianth segments six, the three lower ones hanging down; style and lowest stamen declinate. Capsule roundish, three-celled. Leaves radical, rarely cauline (attached to the base of the stem), lanceolate, or linear. For culture, &c., *see* **Ixia.**

C. capensis (Cape). *fl.* purple; racemes divaricating. July and August. *l.* lanceolate, wavy. Stem leafy, panicled. *h.* 1ft. 1768. (B. M. 568.)

C. lutea (yellow). This differs from *C. capensis* in having a stem with only one or two upright branches, instead of one with many branches and those horizontally spreading or divaricate; in the leaves not being undulate, and in having a larger and different-coloured corolla. *h.* 1ft. 1788. (B. M. 1252.)

C. odoratissima (very fragrant).* *fl.* deep rose, afterwards fading to a pale blush, very sweet-scented, on long peduncles, having a single bract below their middle; anthers yellow, the five upper spotted. July, August. *l.*, radical ones ensiform, straight, dark green; stem ones linear-lanceolate, acuminate. Stem erect, round, somewhat branched, flexuose. *h.* 1ft. This plant does not succeed in the open air, although it has been frequently reported as hardy. (B. R. 1111.)

Other species are: *alba* (white) and *orchidiformis* (blue).

CYANOPHYLLUM (from *kyanos*, blue, and *phyllon*, a leaf; referring to the under surface of the leaves). ORD. *Melastomaceæ.* Stove evergreens, with very beautiful foliage. The species thrive in a compost of good fibrous peat and leaf mould, in equal parts, with one-fourth of silver sand added. In potting, care should be taken that the drainage is perfect, as water must be given freely during summer, both to the roots and foliage; and a thoroughly moist atmosphere must be maintained, to prevent the leaves becoming deformed while they are immature. Propagation is effected by inserting cuttings and eyes in sand, where a good bottom heat can be maintained, and shade from the sun secured; they may also be readily increased by seeds, when these are procurable.

C. magnificum (magnificent).* *fl.* small, insignificant, disposed in a large branching panicle. *l.* broadly-ovate, tapering to a point, opposite, 1ft. to 2½ft. long, 9in. to 12in. wide; upper surface of a beautiful velvety-green, midrib and primary veins ivory-white; under side reddish-purple; veins very prominent. Mexico, 1858. This is one of the most beautiful foliage plants in cultivation, and fully bears out its specific designation. (R. H. 1859, 359.)

Cyanophyllum—*continued.*

C. spectandum (showy). *l.* large, oval, 10in. to 20in. long, 4in. to 7in. broad at the widest part; upper surface rich dark velvety-green, midrib margined with metallic grey; under side pale green, tinged with red, rib prominent. Brazil, 1866. Very handsome and distinct.

Other plants rightly or wrongly referred here in catalogues are: *assamicum*, *Bowmani*, and *speciosum*; they are, however, not worth cultivating where those described above are grown.

CYANOTIS (from *kyanos*, blue, and *ous*, an ear; alluding to the petals). SYN. *Tonningia*. ORD. *Commelinaceæ*. A genus containing about thirty species of pretty stove or greenhouse plants, allied to *Tradescantia*. Flowers nearly regular; perianth segments six; exterior ones nearly equal, navicular, connate at base; inner three long, petaloid, connate by the claws. Leaves various, small or middle-sized, sheathing at the base. Cyanotis require a rich loamy soil, and good drainage. They are propagated chiefly by young cuttings, inserted in sandy soil, in brisk heat. Several species are enumerated.

C. barbata (bearded). *fl.* dark blue; stamens with rather long, upright filaments, densely clothed with deep blue hairs. August. *l.* narrow. India, China, &c. Greenhouse perennial.

C. kewensis (Kew). *fl.* rose. Winter and spring. Malabar, 1874. Stove perennial creeper. SYN. *Erythrotis Beddomei*. (B. M. 6150.)

C. nodiflora (knot-flowered). *fl.* purple. South Africa, 1864. *l.* entire, strap-shaped, ciliate, sheathing at the base. *h.* 9in. to 1½ft. (B. M. 5471.)

CYATHEA (from *kyatheion*, a little cup; in reference to the appearance of the spores on the back of the fronds). ORD. *Filices*. Stove or greenhouse evergreen tree ferns. Fronds simple or pinnate, or decompoundly pinnate. Receptacle elevated, globose, or elongated; involucre globose, inferior, covering the whole sorus, afterwards breaking at the summit and forming a more or less persistent cup, even or regular at the margin. Sori on a vein, or in the axil of the forking of a vein. Stem often aculeated. For culture, *see* **Ferns.**

C. arborea (tree).* *sti.* and rachis pale brown. *fronds* large, bipinnate; secondary pinnæ 5in. to 8in. long, sessile, oblong-lanceolate, deeply pinnatifid or again pinnate; pinnules oblong, sub-falcate, serrated. West Indies, 1793. Unarmed, or copiously prickly. Stove. SYN. *C. Grevilleana*.

C. canaliculata (channelled). *fronds* glabrous, bipinnate; primary pinnæ 8in. to 18in. long, oblong, acuminate, bipinnate, and pinnatifid at the apex; pinnules sessile, 1in. to 1¼in. long, oblong, sub-acute, entire or serrated. *sori* copious near the costa. Mauritius. Unarmed or indistinctly tuberculate. Stove. (H. S. F. xi.)

C. Cunninghami (Cunningham's).* *cau.* 12ft. to 15ft. long. *sti.* and main rachises stramineous and asperous. *fronds* sub-coriaceous, flaccid, tripinnate; primary pinnæ 1½ft. to 2ft. long; secondary ones 3in. to 5in. long, oblong, acuminate, pinnatifid only at the apex; lobes or ultimate pinnules 4in. to 6in. long, linear, obtuse, pinnatifid; lobules entire. *sori* one to each lobe. New Zealand, 1860. Greenhouse.

C. dealbata (whitened).* *fronds* sub-coriaceous, bi-tripinnate; pinnæ oblong, acuminate, pure white beneath, deeply pinnatifid or pinnate at the base; lobes oblong, acute, falcate, serrated. *sori* copious, sometimes confined to the lower half of the lobes. New Zealand. Unarmed or slightly asperous. Greenhouse. See Fig. 579.

C. Dregei (Drege's). *fronds* bipinnate; pinnules sessile, 2in. to 3in. long, glabrous, narrow-oblong, acuminate, deeply pinnatifid; lobes oblong-ovate, sub-falcate, obtuse, more or less serrated. Natal, &c., 1873. Unarmed or only rough, with small tubercles at the base of the stipes. Stove. *C. Burkei* differs from this species in having the lobes of the pinnules rather broader.

C. excelsa (tall).* *fronds* bipinnate, coriaceo-membranaceous; primary pinnæ 2ft. long, 6in. to 8in. wide; pinnules 3in. to 4in. long, ½in. wide, sessile, deeply pinnatifid, sub-pinnate at the base; lobes oblong, obliquely sub-acute, serrated, scaleless. *sori* in the fork near the costa. Mauritius, 1825. Unarmed. Greenhouse or stove. (H. S. F. i, 12 B.)

C. Grevilleana (Greville's). Synonymous with *C. arborea*.

C. Hookeri (Hooker's). *cau.* 1½in. thick. *sti.* short. *fronds* coriaceo-membranaceous, 2ft. to 3ft. long, 4in. to 5in. wide, elongato-lanceolate, acuminate, pinnate, pinnatifid at the apex; pinnæ sub-linear-lanceolate, acuminate, sub-sessile, coarsely dentato-pinnatifid. *sori* dorsal on the veins or in the lower axils. Ceylon, 1873. Stove.

C. insignis (remarkable).* *sti.* scaly. *fronds* ample, coriaceous; primary pinnæ 8ft. long; secondary ones 7in. to 8in. long, elongato-oblong, finely acuminated, sessile, pinnatifid nearly to

Cyathea—*continued.*

the costa; lobes oblong-falcate, obtuse, quite entire, the margin slightly reflexed. *sori* copious. Jamaica. Stove. SYNS. *C. princeps* and *Cibotium princeps*.

C. integra (entire).* *fronds* firm-membranaceous, brownish-green, paler beneath; primary pinnæ ample, 1½ft. long; pinnules sessile or petiolate, 3in. to 5in. long, from a truncated base, oblong-acuminate, pinnatifid nearly two-thirds of the way to the costa, broad-oblong, sub-falcate, acute, serrated. *sori* in two series between the costule and margin. Amboyna and Philippine Islands. Unarmed. Stove. SYN. *C. petiolata*.

C. medullaris (pithy).* *cau.* tall. *fronds* ample, bi-tripinnate, coriaceous; secondary pinnæ 5in. to 6in. long, about 1in. broad, deeply pinnatifid or again pinnate; pinnules oblong or linear-oblong, obtuse, coarsely serrated in the sterile specimens, lobato-pinnatifid in the fertile ones, with the margins revolute. *sori* one to each lobule of the pinnule. New Zealand. Greenhouse.

C. petiolata (petiolate). Synonymous with *C. integra*.

C. princeps (princely). Synonymous with *C. insignis*.

FIG. 579. CYATHEA DEALBATA.

C. Serra (saw-toothed).* *sti.* thicker than a finger, muricated; scales dense, large, whitish. *fronds* bipinnate; pinnules lanceolate, deeply pinnatifid, 6in. to 8in. long, lanceolate, acuminate; lobes linear-oblong, acute, serrated, falcate. *sori* generally covering the whole of the lobes. West Indies, &c. Stove.

C. sinuata (sinuate). *cau.* slender, erect, 2ft. to 4ft. long. *fronds* simple, 2ft. to 3ft. long, 1in. to 2½in. wide, elongato-lanceolate, sinuated at the margin, acuminate, tapering into a short stipe at the base. Ceylon, 1861. Stove. SYN. *Schizæna sinuata*.

CYATHODES (from *kyathos*, a cup, and *odons*, a tooth; in reference to the disk, which is cup-shaped and five-toothed). ORD. *Epacrideæ*. A genus containing thirteen species, of which four are from New Zealand, two from the Sandwich Islands, and the others from Australia. Ornamental erect-branched greenhouse evergreen shrubs, with the habit of small trees. Flowers axillary, erect, or drooping a little, small; corolla funnel-shaped; limb spreading. They thrive in peat. Cuttings will root in sand, with a little peat, if placed under glass.

C. acerosa (needle-like). *fl.* white. April and May. *l.* linear-spreading, with naked margins, three to five-nerved beneath. *h.* 8ft. Victoria and Tasmania, 1823. SYN. *C. Oxycedrus*.

Cyathodes—*continued.*

C. glauca (milky-green).* *fl.* white. April to June. *l.* crowded at intervals, somewhat verticillate, spreading or divaricate, linear-lanceolate. *h.* 25ft. Tasmania, 1818. Tree.

C. Oxycedrus (Prickly Cedar). A synonym of *C. acerosa.*

CYBELE. A synonym of **Stenocarpus** (which *see*).

CYCADACEÆ. An order of small Palm-like trees or shrubs, closely related to *Coniferæ*, usually with unbranched stems, "marked with leaf-scars, and having large rays in the wood along with punctated ligneous tubes." Flowers naked; males in cones; females, consisting only of ovules, on the edge of altered leaves, or placed below or at the base of scales. Seeds hard, or with a soft spongy covering. Leaves pinnate. The order embraces nine genera. Examples: *Cycas, Dioon, Encephabartos, Zamia.*

FIG. 580. CYCAS CIRCINALIS.

CYCAS (the Greek name for a Palm). ORD. *Cycadaceæ.* Stove herbaceous perennials. Male flowers in cones, consisting of scales, bearing anthers on their inner surface. "The female plants bear in the centre of the crown of leaves surmounting the stem, a tuft of woolly pinnately-cleft leaves, in the notches of whose margins the naked or uncovered ovules are placed" (Masters). Stem cylindrical, usually unbranched, terminated at the top by a fine crown of deeply-cut pinnate leaves. They thrive in strong loam and river sand, in moist heat. The pots must be well-drained to prevent any stagnation. Propagation is effected by seeds; and young plants are obtained from suckers, which are occasionally thrown up. For small gardens, the two species *circinalis* and *revoluta*, will be found quite

Cycas—*continued.*

sufficient, as the remainder are, for the most part, distinct only in minor details. The handsome appearance of these plants renders them excellent subjects for decorating either stove, greenhouse, or conservatory; and few subjects are more graceful for the sub-tropical garden than an old specimen of *C. revoluta*, when placed in a warm and sheltered position, where it may be allowed to remain from May till September.

C. circinalis (crook-leaved).* *l.* dark shining green on the upper side, paler below, 6ft. to 12ft. long, pinnate; pinnæ falcate, from 6in. to 12in. long. Stem stout, cylindrical, increasing in size very slowly. Stem of male plant somewhat slender, frequently two to three times divided. East Indies, 1800. See Fig. 580. (B. M. 2826, 2827.)

C. media (middle).* *l.* elliptic-lanceolate, pinnate; pinnæ very numerous, linear, acuminate, lower ones abbreviated and passing into spines; petioles and rachis nearly plane on the upper side, and convex beneath. Trunk stout and tall, cylindrical, bearing a very fine head of large leaves. North Australia and Queensland, 1874. (I. H. 1879, 368.)

C. Normanbyana (Normanby's).* *l.* oblong-ovate, pinnate; pinnæ numerous, contiguous, linear, about 6in. long, ¼in. wide, acutely pointed, slightly narrowed and decurrent at the base; petioles dorsally compressed, with both faces angular and the base clothed with furfuraceous down. New South Wales, 1875.

C. revoluta (rolled back).* *l.* dark green, pinnate, 2ft. to 6ft. long. Stems very stout, bearing a very handsome crown of leaves. China, 1737. In old plants, the stem is sometimes 7ft. high, and then branches, thus presenting a very unique and massive appearance. (B. M. 2963, 2964.)

C. Riuminiana (Riumini's). *l.* erect, spreading towards the apex, pinnate; pinnæ tapering to a fine point, rich bright green. Stem moderately stout. Philippine Islands, 1864. A rare but handsome species. (I. H. 405.)

C. Rumphii (Rumphius'). *l.* pinnate, 4ft. to 6ft. long; pinnæ 6in. to 10in. long, hardly 1in. broad, linear, lanceolate, pale green, texture thin; naked part of the petioles armed with a double row of short spines. Stem slender; summit bearing the crown of leaves. Indian Archipelago.

C. siamensis (Siamese). *l.* about 30in. in length, oblong, pinnately divided into about sixty-five pairs and one terminal segment, all linear-lanceolate, abruptly spine-pointed at the apex, and decurrent at the base along the rachis, which is puberulous and rounded. Stem stout. Cochin China, 1878. This species closely resembles *C. circinalis.* (I. H. 433.)

CYCLAMEN (from *kyklos*, circular; referring to the spiral peduncle). Sowbread. ORD. *Primulaceæ.* A very distinct genus of greenhouse and hardy plants, with circular compressed perennial rootstocks, from which the leaves and flowers spring. Calyx five-partite; corolla tube short; limb large, deeply lobed; lobes reflexed. Leaves all radical, petioled, broad. The hardy species are beautiful dwarf-flowering subjects, well adapted for growing in well-drained positions on a rockery, or, in the case of those sufficiently plentiful, for naturalising in the grass by woodland drives, where it is cool and shady. *C. neapolitanum* succeeds if treated in this way. It flowers profusely in early autumn, at first destitute of leaves, and, at this season, produces a pretty effect. The very numerous varieties, so much cultivated in pots, are the offspring of *C. persicum.* By selection and good culture, these have been already brought to a high state of perfection, and new varieties, of vigorous growth and with distinctly-coloured massive flowers, are still annually selected.

Propagation of Cyclamens, whether species or varieties, is effected by seed, which are never in better condition for sowing than when freshly gathered. The hardy kinds should be sown in pots and placed in a cool frame. As soon as the seedlings appear, they should be grown on in a frame until sufficiently strong to be placed out in their permanent positions. A well-drained soil is essential, and a sheltered situation, with protection in winter, is to be preferred. All varieties reproduce themselves tolerably true from seed, if kept isolated when in flower, to prevent cross-fertilisation.

Cyclamen—*continued.*

Cultivation in Pots. Few plants are better adapted to pot culture for winter and spring decoration than varieties of *C. persicum* (see Fig. 586), and few produce such a profusion of flowers in return for the moderate amount of care bestowed. A system of completely drying off in summer was once thought a good plan; but this has now been abandoned by all good cultivators as most unnatural, and the plants are grown from the seedling to the flowering stage without a check of this sort. Seeds are best sown in the autumn, as, if left until spring, a loss of time is effected in the growth of the plants that are intended to flower the following winter or spring. Ordinary pots or pans should be filled with a compost of light sandy soil, the seed placed thinly over the surface, then pressed in, and slightly covered. A temperature of 55deg. will be sufficient to insure germination, the time occupied varying according to the age of the seed. When the seedlings appear, they must be raised near the light, to prevent them becoming drawn, and, as soon as large enough, pricked off—several in a 5in. pot—and kept like this in a similar temperature till spring. They may then be placed singly in 3in. pots, and grown on in frames during the summer, with plenty of air after becoming established, and also shading from bright sunshine. By July, most of the pots will be filled with roots, and the plants should then be shifted into others, 5in. or 6in. in diameter, in which they will flower. Good

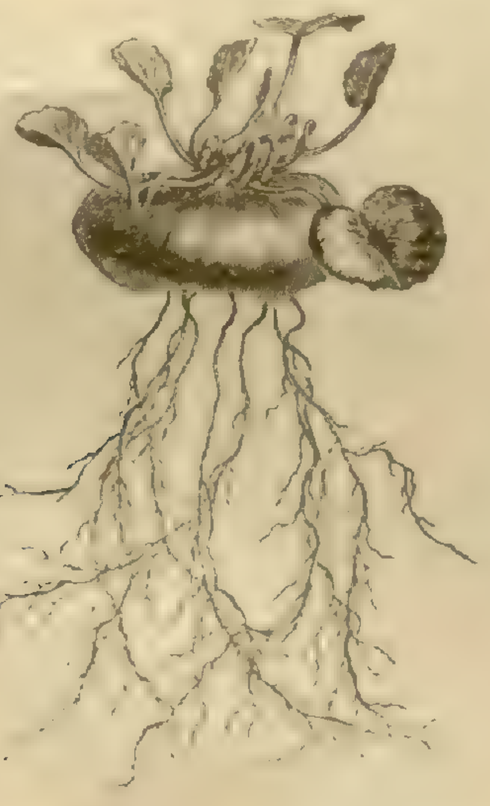

FIG. 581. CYCLAMEN PERSICUM, showing Rootstock and Mode of Rooting.

drainage must be insured, and a compost used of equal parts loam and leaf soil, not, in any case, adding rank manure. The roots proceed from the base of the fleshy rootstock (see Fig. 581), and this should be about half-

FIG. 582. CYCLAMEN PERSICUM, showing Rootstock and Manner of Flowering.

Cyclamen—*continued.*

covered with soil, leaving the tops clear whence the flowers and leaves proceed (see Fig. 582). The after cultivation consists chiefly in keeping the plants, at all times, in a light airy place, near the glass, to prevent drawing, and thereby weakening them. Shade in bright weather only, apply water liberally, and syringe on fine afternoons, to keep the plants clean and encourage growth.

Cyclamens may be grown on a second year by drying moderately and resting for a time, afterwards reducing and repotting. They should receive similar treatment to that previously advised for young plants, but the flowers are generally earlier and smaller a second year. It is not advisable to save plants after this age, as seed sown each year will keep up a stock, and young plants are much to be preferred. If no seed is required, the flowers should be removed when over.

Insects. Cyclamens are particularly subject to injury from Green Fly, Red Spider, and Thrips, at all stages of growth. Neither must be allowed to obtain a footing, or the leaves will soon become curled and irreparably injured. Fumigating frequently, but not too strongly, will destroy fly and many of the Thrips. Sponging the leaves, or dipping them in soft soap water, and afterwards in clean water, is the best remedy for clearing Cyclamens of spider. These pests should be frequently looked for, and, when first observed, measures at once taken to arrest their progress.

C. africanum (African).* *fl.* white or red tinted, with a bright purple spot at the base; corolla segments oblong-spathulate, auricled at the base, ⅜in. to 1in. long. September and October. *l.* fully developed in December, cordate, orbicular, reaching a length and breadth of 6in. to 8in., with both large deltoid teeth and copious irregular intermediate smaller ones, thin in texture, and beautifully marbled with white. Tuber very large, with fibres from all over the surface. *h.* 4in. to 6in. Calcareous Mountains of Algeria. This very fine plant is closely allied to *C. neapolitanum*, and, according to Mr. Baker, is but a subspecies or geographical race of it. (B. M. 5758.)

C. cilicicum (Cilician).* *fl.*, corolla segments pure white, with a bright purple basal blotch, oblong-spathulate, acute, not auricled at the base. October. *l.* developed at the same time as the flowers, sub-orbicular, entire, with close basal lobes. Rootstock a large regular depresso-globose tuber, with the slender root fibres in a tuft from its base. *h.* 4in. Cilicia, 1872. This species somewhat resembles *C. europæum*, but may be distinguished from that by its calyx segments.

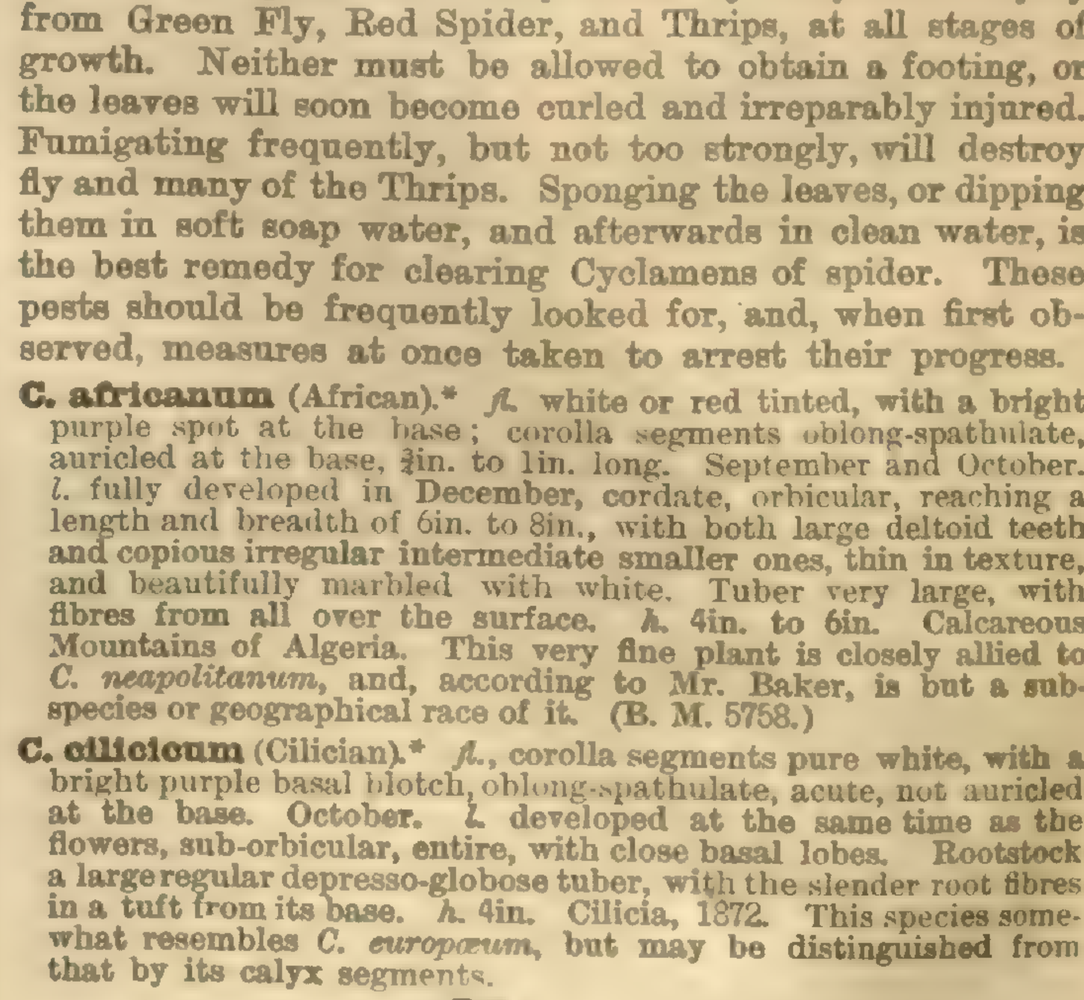

FIG. 583. CYCLAMEN COUM.

C. Coum (Coum).* *fl.* usually deep red, inodorous; corolla the smallest of all the species, with oblong-spathulate segments. February and March. *l.* cotemporary with the flowers, with a shorter petiole than in any of the others, quite orbicular, firm in texture, neither lobed nor toothed, nor variegated with white, tinted purple beneath. Rootstock a depresso-globose tuber, with slender root fibres in a tuft from the base. *h.* 4in. South Europe and Asia Minor. See Fig. 583. (B. M. 4.) The two principal varieties of this in cultivation are *C. album*, with white, and *C. carneum*, with rose-red, corolla segments. *C. orbiculatum*, given by some authorities as a species, is doubtless a variety of this.

Cyclamen—*continued.*

FIG. 584. FLOWER, BUD, AND LEAF OF CYCLAMEN EUROPÆUM.

C. europæum (European). *fl.* bright red, very fragrant; corolla segments oblong-spathulate, ½in. to ¾in. long. August to October. *l.* produced at the same time as the flowers, ovate-orbicular, deeply cordate at the base, with close lobes, moderately firm in texture, marbled with white above, tinted with purple beneath, entire or minutely crenulate, always without large deltoid teeth. Rootstock a depresso-globose regular tuber, with slender fibres from all over its lower half, the tufts of leaves and flowers often connected with it by a rhizome 2in. or 3in. long. *h.* 4in. Central and Southern Europe, widely dispersed, 1596. See Fig. 584. *C. Clusii* (B. R. 1013), *C. littorale* (B. R. 1846, 56), and *C. Peakrianum* (F. M. 262) are Italian forms of this species, with much longer and more delicate flowers.

C. græcum (Greek). *fl.* pure white, with a bright purple spot at the base; corolla segments oblong-spathulate, auricled at the base, ½in. to ¾in. long. September and October. *l.* not developed till after the flowers, cordate-orbicular, obtuse, small, firm in texture for the genus, irregularly denticulate, but without large deltoid teeth, distinctly zoned with white above, and tinted with purple beneath. Tuber large, red, often irregular in form, with a few fibres in a tuft from its base. Mountains of Greece. A well marked species, not unlike *C. neapolitanum*, but quite different in leaves and tuber.

C. Ibericum (Iberian).* *fl.* bright red in the type, with a bright purple spot at the base; corolla segments oblong-spathulate. February and March. *l.* cotemporary with the flowers, ovate-orbicular, very obtuse, entire or faintly undulated at the edge, firm in texture, distinctly zoned with white. Tuber globose, larger than in *C. Coum*, with the slender root fibres in a tuft from the base. *h.* 3in. Caucasus, 1831. This, according to Mr. Baker, is but a sub-species or geographical race of *C. Coum*, but far superior to it for decorative purposes. (S. B. F. G. 9, under name of *C. vernum*). There is a fine garden variety, *C. Atkinsii*, raised by Mr. Atkins, of Painswick; and a form having large pure white flowers, with a bright-coloured purple spot at the base of each segment (figured in F. d. S. 2425).

C. neapolitanum (Neapolitan).* *fl.* white or red, with a bright violet-purple spot at the base; corolla segments oblong-spathulate, with a distinct auricle on both sides at the base, ½in. to ¾in. long. August and September. *l.* developed before the flowers disappear, cordate, ovate, finally 3in. to 4in. long and broad, very variable in shape, thin in texture, usually furnished with several large deltoid teeth, and often, but not always, with minute small ones. Rootstock a very large depresso-globose tuber, sometimes attaining 1ft. in diameter, with fibres produced from all over its surface. Central and Southern Europe, widely dispersed; naturalised in several places in Britain. See Fig. 585.

C. persicum (Persian).* *fl.* inodorous in the type; corolla the largest of all the species; segments white in the type, with a bright claret-purple blotch at the base, oblong-spathulate, not auricled at the base. March and April. *l.* cotemporary with the flowers, ovate, irregularly crenate on the margin, moderately firm in texture, distinctly variegated with white. Rootstock a depresso-globose regular tuber, much larger than in *C. Coum*, with a dense mass of fibres from all over the under side. *h.* 6in. Greece, Palestine, and other parts of Syria, 1731. This is the finest of all the species. See Figs. 581 and 582. There are a large number of garden varieties (see Fig. 586), the most striking of which are figured in F. M. 2435. *C. album punctatum*, *C. alepicum*, and *C. giganteum*, are merely garden forms of this species.

Cyclamen—*continued.*

FIG. 585. CYCLAMEN NEAPOLITANUM, showing Single Flower, Bud, and Habit.

C. repandum (repand). *fl.* rose red, with a bright purple basal spot; corolla segments ½in. to ¾in. long, oblong-spathulate, not auricled at the base. March to May. *l.* cotemporary with the flowers, ovate-deltoid, cordate at the base, with an open sinus, thin in texture, zoned with white, tinged with purple beneath. Rootstock a small globose tuber, with a few slender fibres in a tuft from its base. South Europe. (B. M. 1001, under the name *C. hederæfolium*.)

FIG. 586. CYCLAMEN PERSICUM, GARDEN VARIETY.

Varieties. Mixed seed from a good strain are best for general cultivation, as they can be procured much cheaper, and the produce represents a much greater diversity of colour, than would be obtained from a few named varieties. These latter, in many cases, soon become superseded by still better selections, and are of most use to seed-raisers for fixing a select strain. What is termed the *giganteum* type is one that has flowers of immense size, but less in number. The flowers in this and the ordinary section vary in colour from pure white to dark purple, and some have two or more colours beautifully blended.

CYCLOBOTHRA. *See* **Calochortus.**

CYCLODIUM. *See* **Aspidium.**

CYCLOGYNE. Included under **Swainsona** (which *see*).

CYCLONEMA MYRICOIDES. *See* **Clerodendron myricoides.**

CYCLOPELTIS. *See* **Aspidium.**

CYCNOCHES (from *kyknos*, a swan, and *auchen*, a neck; in reference to the long and gracefully curved column). Swan Neck. ORD. *Orchideæ*. The species of this genus are deciduous. Flowers large, produced from nearly the top of the bulb. Pseudo-bulbs thick and fleshy, 6in. to 10in. high, with three or four leaves on the top of each. Propagation is effected by dividing the bulbs when they commence to start into growth. For cultural and structural remarks, *see* **Catasetum.**

C. aureum (golden).* *fl.* light yellow, disposed in long, closely-set racemes. *h.* 1ft. Central America, 1851. A remarkable and handsome species. (P. F. G. 75.)

C. barbatum (bearded).* *fl.* small, but very pretty; sepals and petals greenish-white, spotted with pink; lip the same colour, and beautifully fringed. June. New Grenada. Very scarce. (B. M. 4479.)

C. chlorochilum (greenish-yellow-lipped). *fl.* large, very fragrant; sepals and petals yellowish-green; lip lighter. June, July. *h.* 2ft. Demerara, 1838.

C. Egertonianum (Egerton's).* *fl.* dark purple; sepals and petals membranaceous, recurved; disk of lip roundish, broken into clavate processes; column slender, very long; raceme pendulous, very long. Autumn. *h.* 2ft. Mexico, 1835. (G. C. 1843, 775.)

C. Lehmanni (Lehmann's).* *fl.*, sepals salmon-coloured; petals and lip orange; peduncle many-flowered. *l.* long, petioled, cuneate, oblong acute, very strong. Pseudo-bulbs about 7in. long, elongate, pear-shaped, furrowed. Columbia, 1880. SYN. *Luddemannia Lehmanni.*

C. Loddigesii (Loddiges').* *fl.* 4in. across; sepals and petals of a brownish-green colour, with darker spots, and bearing some resemblance to the expanded wings of a swan; spikes three or four-flowered. Surinam, 1830. Very curious and desirable. (B. M. 4215.)

C. maculatum (spotted). *fl.* buff-colour, thickly spotted with purple; numerously produced on a long raceme. Pseudo-bulbs very short. *h.* 1ft. Mexico, 1839. (I. H. 20, 143.)

C. musciferum (fly-bearing). *fl.* pale brown; sepals linear-lanceolate, dorsal one refracted; petals linear; lip membranous, hastate; lateral segments linear, ascending, middle one bearded at base, tongue-formed at apex; racemes loose. Early spring. *h.* 1ft. Columbia, 1849. (P. F. G. iii. 29, 248.)

C. pentadactylon (five-fingered). *fl.* very large; sepals and petals pale yellow, tinged with green, with broad chocolate-coloured blotches; lip of the same colour, divided into five parts, like a man's hand. *h.* 1ft. Brazil, 1841. Very curious. (B. R. 29, 22.)

C. ventricosum (inflated). *fl.* very sweet-scented; sepals and petals greenish-yellow, with a white lip. July, August. *h.* 2ft. Guatemala, 1835.

C. Warscewiczii (Warscewicz's).* *fl.* green, those on one spike much larger and totally different in appearance one from the other, so much so that, seen separately, they would be taken as belonging to different genera; the flowers on the shorter spike, with the broad segments and simple lip, are probably female, while the smaller and more numerous flowers on the long raceme, and which have a much-divided lip, are male. 1879. (G. C. n. s., xii. 493.)

CYDONIA (from *Kydon*, in Crete, where the tree grew in large numbers, and where, perhaps, the Greeks first became acquainted with it). Quince. ORD. *Rosaceæ*. Hardy deciduous trees and shrubs. Flowers large, either solitary, or few together in a kind of umbel. Pome closed, five-celled; cells cartilaginous, many-seeded; seed covered with mucilaginous pulp. Leaves undivided, quite entire, or serrated. For culture, &c., *see* **Quince.**

C. chinensis (Chinese). *fl.* light rose-colour; calyx five-parted, reflexed, downy inside. Spring. *l.* stalked, coriaceous, oval, finely serrated. China. Small tree or large shrub. (B. R. 905.)

C. japonica (Japanese).* *fl.* deep scarlet, solitary, or two or three together, produced the greater part of the year; calyx glabrous; lobes short, obtuse, entire. *fr.* green, very fragrant, but not edible, ripening in October. *l.* oval, somewhat cuneated, crenate-serrated, quite glabrous on both surfaces; stipules reniform, serrated. *h.* 5ft. to 6ft. Japan, 1815. "One of the most desirable deciduous shrubs in cultivation, whether as a bush in the open lawn, trained against a wall, or treated as an ornamental hedge plant. It has also been trained up with a single stem as a standard; and, in this character, its pendent branches and numerous flowers give it a rich and striking appearance, especially in early spring. It is difficult to unite with its congeners by grafting; but, if it could be grafted standard high on the Pear, the Hawthorn, or even the common Quince, it would form a most delightful little tree. Readily propagated by layers or suckers, and it also grows by cuttings." See Fig. 587. There are many varieties, including a white, as well as a double red-flowered form.

Cydonia—*continued.*

C. Maulei (Maule's).* *fl.* bright red. April. *fr.* golden-yellow, produced in great abundance, agreeably perfumed, but exceedingly acid to the taste; it, however, makes an excellent conserve. *l.* somewhat smaller than those of *C. japonica*, and plant dwarfer and more compact in habit. Japan, 1874. One of the most beautiful of recently introduced shrubs. SYN. *Pyrus Maulei.* (B. M. 6780.)

FIG. 587. CYDONIA JAPONICA, showing Flowering Branch, Fruit, and Single Flower.

C. vulgaris (common). Common Quince. *fl.* white or pale red, large, few, disposed in a kind of umbel. May or June. *fr.* varying in shape in different varieties, glandular, oblong, ovate, or obovate; it has a peculiar and rather pleasant apple-like smell, and an austere taste. *l.* ovate, blunt at the base, quite entire, clothed with white tomentum beneath, as well as the calyces and pedicels. *h.* 20ft. South Europe, 1573. (Enc. T. and S. 450.) *See also* **Quince.**

FIG. 588. FRUITING BRANCH OF CYDONIA VULGARIS LUSITANICA (PORTUGAL QUINCE).

C. v. lusitanica (Portuguese). Portugal Quince. This has broader leaves and larger fruit than the two under-mentioned kinds; and, being of more vigorous growth, it is better adapted for use as a stock for Pears. See Fig. 588.

C. v. maliformis (apple-shaped). *fr.* apple-shaped.

C. v. pyriformis (pear-shaped). *fr.* pear-shaped.

CYLINDRICAL. Cylinder-shaped; round.

CYLISTA (from *kylix*; in reference to the calyx being very large). ORD. *Leguminosæ*. A stove evergreen woody twiner, with axillary simple racemes of yellow flowers, pinnately-trifoliolate leaves, and rhomboid or ovate, acute, stipellate leaflets; bracts large, caducous.

Cylista—*continued.*

It thrives in a compost of loam and peat. Cuttings will root in sand, if placed in bottom heat, and covered with a glass.

C. albiflora (white-flowered). A synonym of *Rhynchosia cyanosperma.*

C. scariosa (scarious). *fl.* pale yellow, mixed with red; calyx very large, scarious, with the upper segment emarginate, lower one very large. East Indies, 1806.

CYMBIDIUM (from *kymbe*, a boat; referring to a hollow recess in the lip). ORD. *Orchideæ.* A genus of about thirty species of stove orchids, for the most part natives of India, the Malayan Archipelago, and China, two species are African, three Australian, one New Caledonian, and one Japanese. Many of them have small and inconspicuous flowers; but a sufficient number of handsome species are to be found in the genus to induce the cultivator to have it well represented in any house, however small. Their characteristic features are to be found in the long, narrow, sword-shaped leaves, and in the labellum, which is ornamented with a pair of curved elevated lines on the lower part; the sepals and petals are linear-oblong. When once established, Cymbidiums are not difficult to grow; but, on account of their thick fleshy roots, they are by no means easy to restore, if imported in a bad state. They succeed best cultivated in pots, and should be placed in a compost of good rough peat, sphagnum, and a little sharp sand. The thin-leaved kinds, especially, must never be dried, or the loss of many leaves will, as a consequence, follow, to the great disfigurement of the plants; but it should be borne in mind that there must be a great difference made in the quantity supplied during the summer and winter. Cymbidiums, when not growing, should be kept somewhat cool, and plenty of fresh air given at all times, avoiding cold chills.

FIG. 589. CYMBIDIUM EBURNEUM.

Cymbidium—*continued.*

C. affine (kindred). *fl.* white, with a few purplish dots on the anterior of the lip; racemes many-flowered. *l.* linear-acuminate, rigid. India, 1878. (F. M. n. s. 346.)

C. aloifolium (Aloe-leaved). *fl.* rich pale purple, with a long, almost black, stripe down the centre; spikes drooping, many-flowered. September. *l.* very thick and fleshy. *h.* 1ft. East Indies, 1789. (L. B. C. 967.)

FIG. 590. FLOWER OF CYMBIDIUM GIGANTEUM.

C. bicolor (two-coloured).* *fl.* resembling those of *C. aloifolium*, but distinguished from that species by the presence of a sac at the bottom of the lip, and also a number of stains and stripes of very deep crimson. April. Ceylon, 1837.

C. canaliculatum (channelled).* *fl.*, sepals and petals purplish-brown, edged with green; lip greenish-white, with a row of pink spots just within the edge; racemes drooping, bearing numerous moderate-sized flowers. April. *l.* broadly linear-elongate, keeled. Stem short, compressed, almost pseudo-bulbous. North-eastern Australia, 1870. (B. M. 5851.)

C. Dayanum (Day's).* *fl.* yellowish-white, marked with port-wine coloured streaks on the middle lines of sepals and petals, and a similar border and numerous small streaks on the lip; racemes many-flowered, pendulous. *l.* about 4ft. long, narrow. Assam. 1869.

C. Devonianum (Duke of Devonshire's).* *fl.*, sepals and petals light brown, with dull mauve-purple streaks and blotches; lip white, with numerous dark purple lines and blotches, the acute, reflexed, anterior part wholly of a fine dark purple, almost rhomboid; racemes nodding, many-flowered. *l.* lanceolate-oblong, acute, with long channelled petioles. India 1837. (P. M. B. 10, 97.)

C. eburneum (ivory).* *fl.* deliciously fragrant, very handsome, large, Tulip-like; sepals ivory-white; petal and lip stained with pale yellow; racemes erect, usually one (but sometimes two) flowered. February. *l.* narrow, sword-shaped, distichous, bright light green. With age, this very rare species forms a stout stem-like pseudo-bulb, but, when young, it shows no sign of this. East Indies, 1846. See Fig. 589. (B. R. 33, 67.) There are one or two varieties.

Cymbidium—*continued.*

C. giganteum (gigantic).* *fl.* large; sepals and petals brown; lip brown, stained with yellow and blotched with purple; racemes erect, many-flowered. Winter and spring, lasting several weeks in beauty. The plant has a distinct pseudo-bulb, which is clothed with the broad sheathing bases of the long sword-like leaves. Northern India, 1837. A strong and bold-growing species, but somewhat shy at flowering. See Fig. 590. (P. M. B. xii. 241.)

C. Hookerianum (Hooker's).* *fl.* very large, upwards of 4in. in diameter; sepals and petals green; lip straw-coloured, deep yellow at the margins, round which are large blotches of rich purple; racemes erect. Sikkim Himalayas, 1866. A fine cool-house species, similar to *C. giganteum* in habit, but striped with greenish-yellow at base of the leaves. (B. M. 5574.)

C. Huttoni (Hutton's).* *fl.* rather large; petals wholly of a deep chocolate-colour; sepals and lip thickly marked with transverse chocolate-coloured bars on a whitish ground; racemes long, drooping, radical. *l.* twin, coriaceous, nerveless. Pseudo-bulbs elongated. Java, 1857. A very distinct species. (B. M. 5676.)

C. Leachianum (Leach's).* *fl.*, sepals and petals ligulate, acute, whitish-ochre colour, with a brown line running nearly to the apex; lip nearly totally brown except the whitish disk with two keels, three-lobed; racemes loose. *l.* linear-lanceolate, acute. Formosa, 1878.

C. longifolium (long-leaved). *fl.* olive-green, brown, whitish. November. India, 1873.

C. Lowianum (Low's).* *fl.* large; sepals and petals green, with a few faint sepia-brown lines over the strongest nerves; lip whitish-yellow; disk of anterior lacinia in the beginning purple, later maroon brownish-purple, with a very narrow pallid border, a few spots at base of lip. March. Burmah, 1877. (G. C. n. s., xi. 405.)

C. Mastersii (Masters').* *fl.* pure ivory-white, saving a stain of pink on the lip, and with a fragrance like that of almonds: racemes erect, many-flowered. Winter. Assam, 1841. In general appearance, the growth of this species resembles *C. eburneum*, but the leaves are longer, broader, and more recurved, and are destitute of the close sheathing base which is a striking feature in that plant. (Gn., May, 1884.) There are one or more varieties of this species.

C. ochroleucum. *See* **Camaridium ochroleucum.**

C. Parishii (Parish's).* A very rare and beautiful species. Described as follows: sepals and petals ivory-white; lip with an orange middle zone, and an orange disk to the anterior lobe, both painted with purplish-brown spots. The side lobes of the lip have numerous spots of a most lively purplish-violet, which give the chief charm to the flower. The back side of the column is white, the edges are yellow, and the front side is yellow, with some brownish-purple spots on the foot. Peduncle two or three-flowered. *l.* ligulate, narrow, acute. Burmah, 1874. (W. O. A. 25.)

C. pendulum (pendulous). *fl.*, sepals and petals brown; lip red, striped with white; racemes long, drooping, from 1ft. to 2ft. in length, many-flowered. July and August. *l.* erect, long, narrow, thick, leathery, dark green. Nepaul, 1838. A large-growing plant. (B. R. 26, 25.)

C. p. purpureum (purple).* A very handsome variety, producing racemes from 2ft. to 3ft. long; sepals and petals of a rich deep red; lip white, with crimson markings. East Indies, 1868.

C. sinense (Chinese).* *fl.* deliciously fragrant: sepals and petals brown and purple; lip yellowish-green, spotted with purple; racemes tall, erect, many-flowered. China, 1793. (L. B. C. 37.)

C. tigrinum (striped). *fl.* large; sepals and petals greenish-yellow, spotted with red; lip large, tapering to a point, middle portion white, striped with cross bars of purple, sides of the lip also purple. *l.* about 6in. long. Pseudo-bulbs nearly round. Tenasserim, 1864. (B. M. 5457.)

CYMBIFORM. Boat-shaped.

CYMBURUS. A synonym of **Stachytarpheta** (which *see*).

CYME. An inflorescence which is branched and centrifugal, the central flower always opening first. Example: *Cerastium.*

CYNANCHUM (from *kynos*, a dog, and *ancho*, to strangle; in allusion to the poisonous properties of some species). SYN. *Symphyoglossum.* ORD. *Asclepiadeæ.* A genus containing about eighteen species of twining herbs or sub-shrubs, natives of South Europe, Africa, Asia, and Australia. Umbels interpetiolar; corolla sub-rotate, five-parted; corona membranous, forming a loose cup or tube round the anthers; anthers terminated by a membrane. Leaves opposite. The following species are of very easy culture in ordinary garden soil; and are readily propagated by dividing the roots, in spring.

C. acutum (acute). *fl.* white or rose-coloured, scented, in small, stalked, axillary or terminal umbels. July. *l.* lanceolate, deeply cordate at the base. *h.* 2ft. to 12ft. South Europe, &c. Hardy climber.

C. nigrum (black). A synonym of *Vincetoxicum nigrum.*

C. pilosum (pilose). A synonym of *Vincetoxicum pilosum.*

Cynanchum—*continued.*

C. roseum (rosy).* *fl.* rosy-red. Summer. *l.* shortly stalked, narrow-linear. *h.* 1ft. to 1½ft. Western Asia. Hardy perennial. SYN. *Cycoctonum roseum.*

C. Vincetoxicum (Vincetoxicum). A synonym of *Vincetoxicum officinale.*

CYNARA (from *kyon*, a dog; the spines of the involucre being likened to dogs' teeth). Artichoke. ORD. *Compositæ.* A genus containing about six species of hardy herbaceous thistle-like perennials, natives of the Mediterranean region and Canary Islands. Involucre broad or sub-globose; coriaceous bracts in many series; receptacle fleshy, flat, densely setose; pappus hairs many-seriate, plumose. Although some of these are much more generally grown for economic purposes than for floricultural ornament, few plants are more stately or effective when planted in the backgrounds of borders or the outskirts of shrubberies. For culture and propagation, *see* **Artichoke** (**Globe**) and **Cardoon.**

C. Cardunculus. Cardoon. *fl.-heads* purple; scales of involucre ovate. August and September. *l.* spiny, all pinnatifid. *h.* 5ft. South Europe, 1658. (B. M. 3241.)

C. horrida (horrid). *fl.-heads* purple. August and September. *l.* pinnatifid, downy beneath, spiny; spines of the base of leaves and pinnæ connate at base. *h.* 6ft. South Europe, &c., 1768. (S. F. G. 834.)

C. Scolymus. Globe Artichoke. *fl.-heads* purple, very large; involucre consisting of oval-obtuse, sometimes emarginate, downy scales. Autumn. *l.* long, nearly pinnatifid, somewhat spiny; under surface covered with white cottony down. *h.* 3ft. to 6ft. 1548. This is not a species, but merely a cultivated form of *C. Cardunculus*; it is nowhere found wild.

CYNIPS. *See* **Galls.**

CYNIPS ROSÆ. *See* **Rose-Galls.**

CYNOCRAMBE. A synonym of **Thelygonum** (which *see*).

CYNOGLOSSUM (from *kyon*, *kunos*, a dog, and *glossa*, a tongue; in allusion to the form of the leaves of most species). Hound's Tongue. ORD. *Boragineæ.* Tall, robust, downy biennials or perennials, soft to the touch. Racemes usually bractless, secund, terminal, simple, bifid, or twin; corolla funnel-shaped or sub-rotate; throat closed by prominent scales. Leaves large, broadest at top. All the species are coarse-growing, but the flowers of some are very pretty. For culture, *see* **Dipsacus.**

C. cheirifolium (Wallflower-leaved). *fl.*, corolla rose-coloured, processes of the throat deep red; racemes bracteate, terminal, simple. June and July. *l.* lanceolate, obtuse, tomentose, hoary. *h.* 6in. to 12in. South Europe, 1596. Biennial.

C. Dioscoridis (Dioscorides'). *fl.*, corolla red or flesh-coloured, with deeper veins; racemes elongated, bractless, loose, usually terminal. June. *l.* narrow-lanceolate, acuminated, dilated at the base, rather hispid. *h.* 1½ft. to 2ft. South-west Europe, 1820. Biennial.

C. officinale (officinal). *fl.*, corolla reddish; processes of the throat purple; racemes bractless, panicled at the time the flowers are open, terminating the branches and stem. June. *l.*, lower ones broad-lanceolate; superior ones broadest at the base, acute, canescent from downy tomentum. *h.* 2ft. Europe (Britain). Biennial.

C. o. bicolor (two-coloured). *fl.*, corolla white, with the processes in the throat red, and the limb marked with five red spots. *l.* lanceolate, narrowed at the base, downy; upper ones sessile, cordate. Germany. Biennial.

C. pictum (painted). *fl.*, corolla purple or blue, elegantly marked with deeper-coloured, dichotomous veins, which are branched at top; racemes bractless. August. *l.* lanceolate, acute; upper ones ovate-lanceolate, cordate, finely tomentose. Stem bluntly angular. *h.* 2ft. South Europe, 1658. Biennial. (B. M. 2134.)

C. virginicum (Virginian). *fl.*, corolla pale blue; racemes bractless. July. *l.*, lower ones somewhat spathulate-lanceolate; superior ones clasping by a deep heart-shaped base, lanceolate-oblong, acute; smoothish above and shining, but scabrous beneath. *h.* 2ft. to 5ft. United States. Perennial.

CYNOMETRA (from *kyon*, a dog, and *metra*, a matrix; in reference to the shape and consistence of the pods). ORD. *Leguminosæ.* Stove evergreen trees. Flowers red, rising from the main trunk of the tree. Legumes brown, edible. Leaves abruptly pinnate, consisting of a single pair of leaflets. About twenty species are known to science; they are distributed over the tropical portions of both hemispheres. For culture, *see* **Copaifera.**

Cynometra—*continued.*

C. cauliflora (stem-flowering). *fl.* white; racemes rising in fascicles from the trunk, sometimes short and few-flowered, sometimes elongated and many-flowered. *l.*, leaflets emarginate at the apex. *h.* 30ft. to 40ft. East Indies, 1804.

CYPELLA (from *kypellon*, a goblet or cup; referring to the form of the flowers). SYN. *Polia*. ORD. *Irideæ*. Very pretty little half-hardy bulbous plants, comparatively rare in cultivation. Perianth segments free; outer ones obovate, spreading; inner ones much narrower, erect, with recurved apices. Leaves plicate. Bulbs tunicated. They thrive in light soil, in a moderately sheltered position. If the roots are allowed to remain in the ground during winter, ample protection must be afforded; but it is generally more satisfactory to lift them, and plant again in spring. Propagated by offsets; or by seed, sown as soon as ripe, in a cool house.

C. cærulea. *See* **Marica cærulea.**

C. Herberti (Herbert's).* *fl.* yellow, varying from a light shade to a deep chrome tint, sparingly produced on a stalk; perianth segments ovate at the tip, somewhat contracted in the middle, and spotted or barred with a deeper colour at the base. July. *l.* lanceolate, tapering. *h.* 1ft. Buenos Ayres, 1823. (B. M. 2599, under the name of *Tigridia Herberti*.)

C. peruviana (Peruvian). *fl.* two to three in a solitary stalked terminal cluster, fugacious, and appearing in succession from the spathe; limb bright yellow, spotted at the base with red brown; stigma bright yellow, bifid, petaloid. *l.*, stem ones glabrous, linear, papyraceous, plicate; basal ones vanished by the time the plant flowers. Bulb ovoid, tunicate. Andes of Peru, 1874. A very handsome species. (B. M. 6213.)

C. plumbea (leaden-coloured). *fl.* lead-coloured, tinged with yellow in the centre, solitary, widely expanded, very fugacious, lasting only a few hours; stigma consisting of short, two-lobed, transverse, tender lobes. Autumn. *l.* distant, sword-shaped, plicate. Stem slender, 3ft. or more high. Mexico, 1838. A very remarkable plant. (B. M. 3710, under the name of *Phalocallis plumbea*.)

CYPERACEÆ. An extensive order of grass-like tufted plants, with solid, usually jointed, and frequently angular, stems. Leaves with their sheaths entire. The order contains few genera of horticultural value; but the following include species worth notice: *Carex*, *Cyperus*, *Papyrus*, and *Scirpus*.

CYPERUS (from a Grecian appellation given to one of the species of this genus). Including *Trentepohlia*. ORD. *Cyperaceæ*. A genus of about 700 species of perennial (rarely annual) rush or grass-like herbs, of various habit. Flowers bisexual, glumaceous; spikes two-ranked, many-flowered; glumes of one valve, keeled, mostly all fertile, equal; bristles none; stamens one to three. Leaves narrow, grass-like. Of the enormous number of species belonging to this genus, the following are amongst the only ones generally cultivated; these are valuable for decorative purposes. They may be grown in small pots, in a compost of loam and sand, with the addition of a little peat. Plenty of moisture is essential. Propagation is effected either by divisions, or by seed, sown in gentle heat.

C. alternifolius (alternate-leaved).* Stems erect, numerous, dark green, jointless, supporting a quantity of long narrow leaves, arranged in an umbellate manner. *h.* 1ft. to 2½ft. Australia. The habit of this elegant greenhouse plant is very compact. It constitutes an excellent window subject. Perennial.

C. a. variegatus (variegated).* A very pleasing form. Stems and leaves elegantly streaked with white, and sometimes wholly white. It is very useful for cutting, as well as for vase and table decoration. *h.* 1½ft. Greenhouse perennial.

C. laxus (loose). *fl.*, spikelets oblong, bluntish, greenish, or greenish-brown, six to sixteen-flowered; glumes roundish-elliptical, mucronate, with a greenish spreading point. Stem triangular, glabrous. *h.* 2ft. to 3ft. West Indies. This perennial plant is well adapted for table decoration; and, to grow it successfully, requires to be placed in a damp greenhouse. (G. C. n. s., ii. 99.)

C. longus (long).* *fl.*, panicle umbellate-corymbose, lax; spikelets linear, attenuated at each end; glumes three to five-nerved, always erect, chestnut-red, with a green midrib. Autumn. *l.* two or three, in the lower half of the stem, grooved above, or sharply keeled beneath, scabrous at the edges, bright green and shining above, pale beneath; sheaths reddish-brown at the base. Stem solitary, erect, triquetrous, stiff. *h.* 2ft. to 4ft. Europe and North Africa. England (but rare), in marshes and wet meadows; abundant in the Channel Isles. An elegant perennial plant for margins of lakes, &c. (Sy. En. B. 1578.)

CYPHIA (from *kyphos*, curved; in reference to the stigma being gibbous). ORD. *Campanulaceæ*. A genus containing about a score species of half-hardy perennial herbaceous plants, natives (with the exception of one from Abyssinia) of the Cape of Good Hope. Corolla bilabiate; segments easily separated to the base, spreading at the apex. Leaves alternate, undivided, pinnate, and pinnatifid. They thrive in an equal mixture of loam, peat, and sand. Cuttings will root readily under a hand glass, in a cool house. Some species have large tuberous roots, which must be kept quite dry when not in a growing state, or they will rot. They may be increased just as the stems begin to push out from the root, by cutting off as many of the shoots as are required, and placing them in a small pot, in the soil recommended above, with plenty of sand. The young plants should be kept dry till callused, but not covered with glass. They will soon form tubers of themselves, and the old plants will make fresh shoots.

C. bulbosa (bulbous). *fl.* pale blue. August. *l.* digitate; lower ones pinnatifid, with unequal lanceolate lobes; upper ones often simple. Stem rarely branched. *h.* 6in. 1791.

C. Cardamines (Cardamine-like). *fl.* racemose, on very short pedicels. July. *l.* pinnate, with ovate, toothed leaflets. Stem scape-formed, simple. *h.* 6in. 1823.

C. Phyteuma (Rampion). *fl.* pink; scape erect. February. *l.* oblong, crenated, ciliated. *h.* 3in. 1822. (B. R. 625.)

C. volubilis (twining). *fl.* axillary, solitary, pedicellate; corolla pale blue, ringent or bilabiate, about 1in. long. *l.* entire and toothed, linear. Stems filiform, twining contrary to the sun's apparent motion. 1795.

CYPHOKENTIA (from *kyphos*, a tumour, and *Kentia*; a Kentia-like Palm, having a lateral protuberance on the fruit). ORD. *Palmeæ*. For cultivation, *see* **Areca.**

C. robusta (robust)* is described as a very elegant plant, with pinnately-divided spineless foliage. New Caledonia, 1878.

CYPHOMANDRA (from *kyphoma*, a hump, and *aner*, a man; in allusion to the anthers forming a hump). SYN. *Pionandra*. ORD. *Solanaceæ*. In this genus there are about twenty-four species, all natives of South America. The only one worthy of mention here is *C. betacea*, which is a handsome greenhouse shrub, thriving in a compost of loam and leaf mould. Propagated by seed; or by cuttings, placed under a hand glass, in bottom heat.

C. betacea (esculent). *fl.* in long pendulous racemes, when in bud purple, then greenish; when fully expanded green, with a dark streak on the back of each segment. *fr.* reddish when ripe, egg-shaped; an excellent substitute for tomatoes. *l.* somewhat succulent, stalked, shortly acuminate, entire, glossy dark green. Stem erect, arborescent, finally attaining a height of 12ft. to 14ft. South Brazil, 1836. SYN. *Solanum fragrans*. (B. M. 3684.)

CYPHOSPERMA (from *kyphos*, a hump, and *sperma*, seed; in allusion to the form of the seed). ORD. *Palmæ*. A genus containing a couple of species of unarmed stove palms, with stout annulated stems; both are natives of New Caledonia. The second species has not yet been introduced to cultivation, and that described below is much better known under its garden name of *Kentia robusta*. For culture, *see* **Areca.**

C. Veillardii (Veillard's). *l.* pinnatisect; segments coriaceous, elongate-ensiform. New Caledonia. SYNS. *Kentia robusta* and *K. Veillardii*.

CYPRESS. *See* **Cupressus.**

CYPRIPEDIUM (from *Kypris*, Venus, and *podion*, a slipper). Lady's Slipper. ORD. *Orchideæ*. This is one of the most interesting and important genera of the whole Orchid family, whether viewed from a botanical or horticultural point of view. One characteristic of the vast majority of orchids is the possession of only one perfect stamen, the two lateral ones being abortive. To this rule *Cypripedium* forms an exception, possessing, as it does, two fertile lateral stamens, the central one (which is fertile in other orchids) being represented by a singular shield-like plate. The large inflated pouch which is formed by the labellum suggested both English and Latin names. This pouch plays a considerable part in securing the fertilisation of the flower.

Cypress Vine — See Ipomœa Quamoclit

Cypripedium—*continued.*

Sir John Lubbock, speaking of *C. longifolium*, says: "The opening into the slipper is small, and partly closed by the stigma and the shield-like body which lies between the two anthers. The result is that the opening into the slipper has a horseshoe-like form, and that bees or other insects which have once entered the slipper have some difficulty in getting out again. While endeavouring to do so, they can hardly fail to come in contact with the stigma, which lies under the shield-like representation of the middle anther. As the margins of the lip are inflected, the easiest exit is at the two ends of the horseshoes, and by one or other of these the insect generally escapes; in doing which, however, it almost inevitably comes in contact with, and carries off, some of the pollen from the corresponding anther. The pollen of this genus is immersed in a viscid fluid, by means of which it adheres first to the insect, and secondly to the stigma, while in most orchids it is the stigma that is viscid."

Reference has already been made to the remarkable pouch by which the flowers are characterised: it may be added that the petals and sepals are narrow and rather long, extending sometimes into slender tail-like appendages of great length. The blossoms are, in different species, yellowish, pink, or white; in some instances, they are beautifully dotted and lined with pink or green, and in many kinds purple and brown, of various shades, are the predominating colours.

All amateur plant growers who are about to commence orchid growing, should begin with a few of the commoner species of Lady's Slipper, for the following reasons: they are not expensive, or difficult to cultivate, but thrive admirably amongst ordinary stove plants; they flower very freely, and continue in perfection a long time. Some blossom in mid-winter, others during the summer months; and those who wish for fine exhibition subjects cannot have more attractive or telling plants.

Cultivation. Although Cypripediums are very easily cultivated, they differ from the majority of orchidaceous plants, inasmuch as they do not, in potting, require to be elevated above the rim of the pot, but inserted in the same manner as ordinary plants. The best soil for them is a mixture of two parts good peat, one part chopped sphagnum, one part thoroughly decayed leaf mould, and a portion of sharp silver sand. In potting, an important point for consideration is drainage. This must be thorough and effective, for, as these plants have no pseudo-bulbs to sustain them, they must not be dried off, as many other orchids are, during winter; and, if the drainage is defective, the roots are sure to decay and the leaves shrivel. In the case of the hardier kinds of Lady's Slipper, a large portion of good friable loam, in addition to the above soil, is recommended. It has been frequently said that deciduous species of *Cypripedium* are very difficult to cultivate; but, with a suitable rather shady position and a little care, they will thrive as well as many other herbaceous plants.

C. acaule (stemless).* *fl.* solitary, large; sepals and petals greenish, shorter than the drooping lip, which is of a beautiful warm rose, blotched with purple. May and June. *l.* twin, broad, light green, sparingly clothed with short soft downy hairs; from their centre arises the short scape. Northern United States, 1786. An extremely rare species, of great hardihood. (B. M. 192.) A white-flowered variety also occurs.

C. Argus (Argus).* *fl.* white, rose, green, blackish-purple, and purple-brown March and April. *l.* handsomely tessellated with grey. *h.* 1ft. Philippines, 1873. Stove. (B. H. 1882, 9.)

C. arietinum. Ram's-head.* *fl.* solitary; sepals and petals greenish-brown; lip red and whitish-veined. May. Stems leafy, stiff. *h.* 7in. to 10in. Northern United States and Canada, 1808. A neat little hardy species. (B. M. 1569.)

C. Ashburtoniæ (Lady Ashburton's).* *fl.*, dorsal sepal large, and not unlike *C. barbatum*; petals ligulate, white, tinged with green, and veined with purple; lip pale purple, tinged with yellow, and slightly blotched with purple. *l.* ligulate, dark green, faintly reticulated. Stove. A handsome hybrid, raised from *C. barbatum* and *C. insigne*. (G. C. n.s., 1871, 1647.)

C. barbatum (bearded).* *fl.* solitary; dorsal sepal large and broad, the lower portion beautifully flecked with purple, the upper half pure white; petals similar in colour, ornamented with several tufts of black hairs, which are produced from the purple shining warts bordering the upper edge of the petals; lip large, blackish-purple. Spring and summer. *l.* distichous, oblong, light green, curiously blotched and spotted with irregular markings of very dark green. *h.* 1ft. Malacca, 1838. Stove. This is about the most familiar species of the genus. See Fig. 591. (B. M. 4234.) There are numerous forms of the species, which vary considerably in the peculiar mottling of the leaves, and in the size and brilliancy of the colouring of their blossoms, so that, to insure a good typical form, intending purchasers should make their selection whilst the plants are in flower. The following are the best varieties:

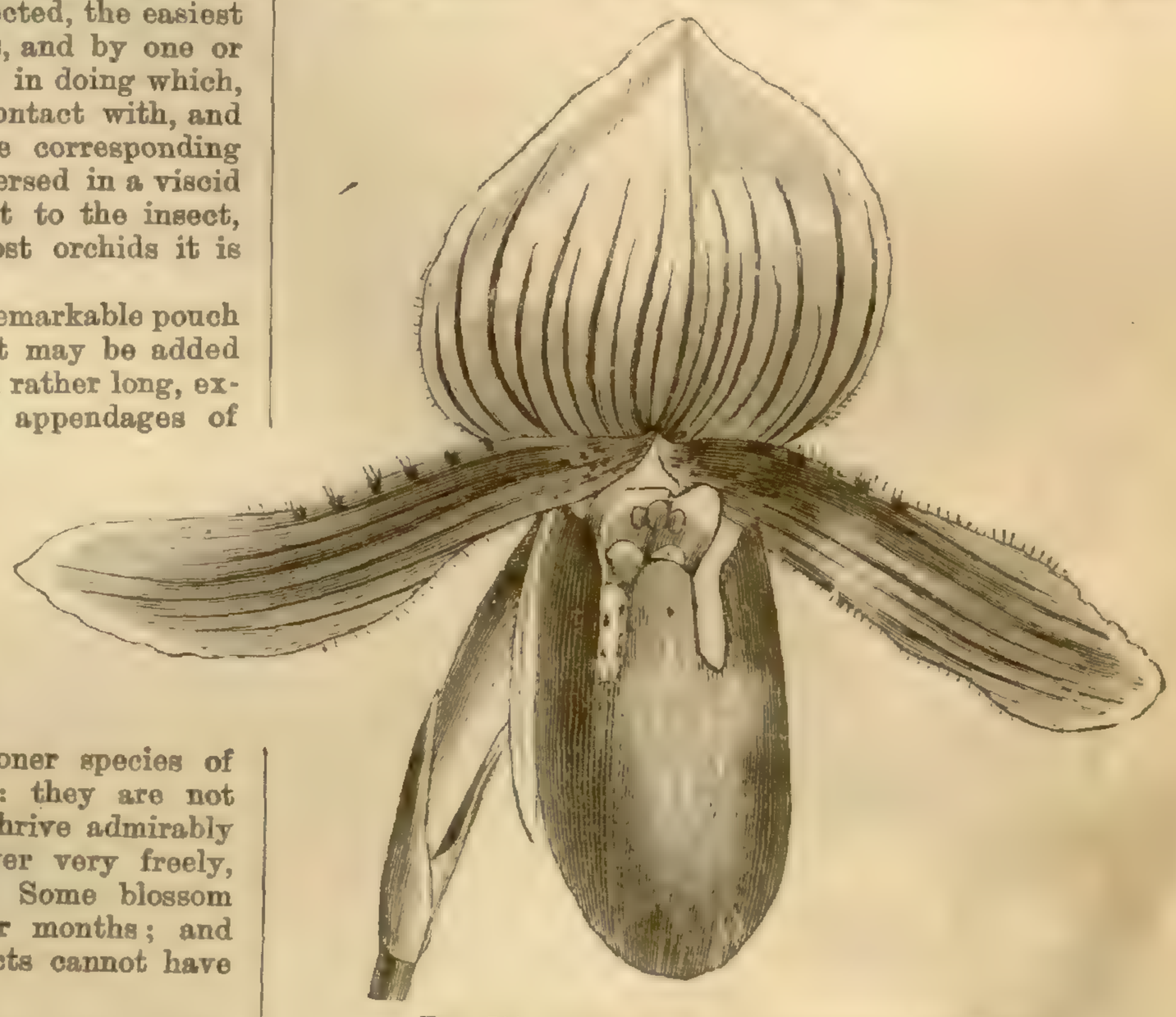

FIG. 591. FLOWER OF CYPRIPEDIUM BARBATUM.

C. b. nigrum (black). *fl.* larger than those of any other form of the type, and the colour much darker. The foliage is finely variegated. It continues six weeks in flower.

C. b. superbum (superb).* Much like the type, but with brightly variegated foliage, flowers more handsome, lip very dark, and the dorsal sepal purer white towards the apex.

C. b. Veitchianum (Veitch's).* A very fine form, with spotted petals.

C. biflorum (two- wered). *fl.*, dorsal sepal very handsome, upper part white; rer ..ning parts of the blossom purplish-brown; spikes nearly 1ft. long. *l.* elegantly variegated. *h.* 4in. India. Stove. Allied to *C. barbatum*.

C. Boxallii (Boxall's).* *fl.*, upper sepal of a beautiful fresh light green, with a narrow white border, covered with brownish-black spots; inferior sepal oblong-acute, shorter than the lip, light green, with lines of very small reddish-brown spots; petals broadly cuneate at the base, dilated at the apex, blunt, light green, with a dark, rather broad bluish-violet line from the base of the middle line up to near the apex; lip chiefly forming a blunt conical sac, with two channelled upright horns and a channelled claw, greenish-yellow, with a dense row of cinnamon spots under the orifice of the sac. Peduncle covered with dark blotches. India, 1877. Stove. (I. H. 345.)

C. Calceolus.* Common Slipper. *fl.* usually solitary; sepals and petals narrow, spreading, reddish-brown or maroon colour; labellum pale yellow. *l.* glabrous, dark green. *h.* 12in. to 18in. North Asia and Europe (England). Hardy. See Fig. 592. (G. C. n. s., xi. 813.)

C. calurum. *See* **Selenipedium calurum.**

C. candidum (white).* *fl.*, sepals and petals greenish-brown; lip white. Early summer. *h.* 12in. North America, 1826. A neat and pretty species. Hardy. (B. M. 5855.)

C. caricinum. *See* **Selenipedium caricinum.**

Cypripedium—*continued.*

FIG. 592. CYPRIPEDIUM CALCEOLUS.

C. concolor (one-coloured).* *fl.* cream-coloured, finely speckled, borne in pairs on dark brown stems. *l.* beautifully variegated. Moulmein, 1865. A very distinct stove species. See Fig. 593. (B. M. 5513.)

FIG. 593. CYPRIPEDIUM CONCOLOR.

C. Crossii (Cross's). *fl.*, dorsal sepal large, ground colour whitish, with a purplish blotch in the centre, from which spring lines of the same colour; lower half of sepal marked with green lines; lateral sepals whitish, lined with green, tipped reddish-purple; lip reddish-purple. *l.* light green, blotched with darker colour. Peru, 1864. (B. H. 1865, 226.)

C. Dayanum (Day's).* *fl.* large; sepals white, with green veins; petals purplish, tinged with green. May, June. *l.* with very beautifully distinct variegation. Borneo, 1860. Stove. (F. d. S. 1527.)

C. Dominianum. *See* **Selenipedium Dominianum.**

Cypripedium—*continued.*

C. Druryi (Drury's).* *fl.*, sepals greenish-yellow, covered outside with numerous dark hairs, middle line broad, black; petals broad, ligulate, bent a little downwards, each equally adorned with a broad black line over the middle; lip ochraceous, with numerous brown spots on its channelled base. *h.* 6in. India, 1877. This stove species has the general habit of *C. insigne*, but the leaves are more acute and usually shorter, and the flower is very different.

C. euryandrum (large-anthered).* A very distinct hybrid between *C. barbatum* and *C. Stonei*. The sepals come near those of the latter, but the upper one is more blunt; petals ligulate, rather broad, much longer than those of *C. barbatum*, much shorter than those of *C. Stonei*; the lip comes near that of *C. barbatum*, but is larger. (F. d. S. 2278, 2279.)

FIG. 594. CYPRIPEDIUM FAIRIEANUM.

C. Fairieanum (Fairie's).* *fl.* solitary; dorsal sepal large, white, beautifully streaked with green and brownish-purple; petals similar in colour and curiously curved at the ends; lip rather large, dull purple, suffused with dull brown and shaded with green. *l.* about 3in. long, narrow, pale green. *h.* 1ft. East Indies. The flowers are produced in great abundance, and will last several weeks in full beauty if not sprinkled with water. It thrives best in a cool house. See Fig. 594. (B. M. 5024.)

C. guttatum (spotted).* *fl.* beautiful snow-white, heavily blotched or marbled with deep rosy-purple, rather small. June. *l.* twin, broadly ovate, downy. *h.* 6in. to 9in. Northern Russia, Siberia, and North America, 1820. A very charming but rare hardy species, thriving in a shady position on rockwork or in a border, in leaf mould, moss, and sand; it must be kept rather dry in winter. (P. F. G. 1, 183.)

C. Harrisianum (Harris's).* A hybrid between *C. barbatum* and *C. villosum*. *fl.* larger than those of the first-named, yet inferior in size to *C. villosum*; upper sepal broad, shining, dark purple, tipped with white; petals rich purple; lip claret-coloured, tipped with green. *l.* marked like those of *C. barbatum*, with the polished appearance of *C. villosum*.

C. Haynaldianum (Haynald's).* *fl.*, upper half of upper sepal faintly rose and white, lower greenish, beautifully blotched with brown; inferior sepal pale green, slightly spotted brown; lip green, with a rounded base; raceme two or more flowered. Winter. Philippines, 1877. This species comes very close to *C. Lowii*. (B. M. 6296.)

C. Hincksianum. *See* **Selenipedium Hincksianum.**

C. hirsutissimum (very hairy). *fl.* often 6in. across, solitary or in pairs, on erect hairy scapes; sepals and petals green, shaded with purple, and dotted with brown; lip greenish, with a profusion of brown dots. March to May. *l.* pale green, about 10in. long. *h.* 1ft. Java. Less showy than many others, but well worth growing. Stove. (B. M. 4990.)

C. Hookeræ (Mrs. Hooker's).* *fl.* solitary, on very long scapes; sepals and petals yellowish-brown, the points of the latter being of a rich rosy purple; the pouch is somewhat small, brown, suffused with yellow. Summer. *l.* broad, obtuse; ground-colour deep black green, beautifully variegated with irregular-shaped blotches of pure white. Borneo, 1868. Stove. (B. M. 5362.)

Cypripedium—*continued.*

C. insigne (remarkable).* *fl.* solitary, often 5in. across; dorsal sepal broad, large, yellowish-green, faintly streaked with lines of reddish-brown, and the upper part pure white; lip large, tawny-yellow, paler within. Winter, lasting several weeks in beauty. *l.* long, strap-shaped, yellowish-green, coriaceous, distichous. Nepaul, 1819. A well-known and very useful stove plant. See Fig. 595. (B. M. 3412.)

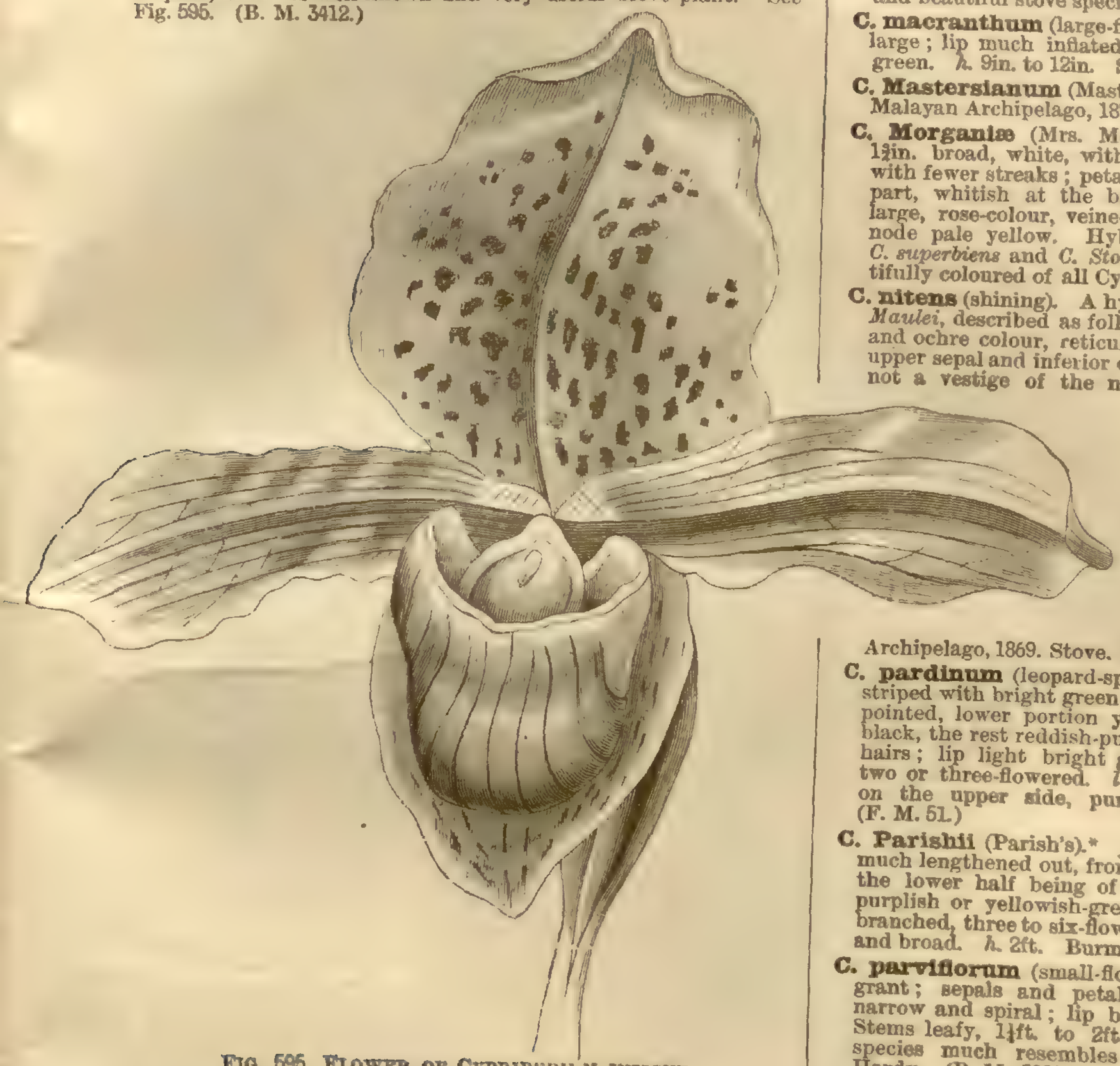

FIG. 595. FLOWER OF CYPRIPEDIUM INSIGNE.

C. i. Maulei (Maule's).* This, though similar in general appearance to the type, is nevertheless distinct and beautiful; it is somewhat more delicate in its habit of growth. The flowers are produced at the same season of the year, but are much brighter in colour, the dorsal sepal being spotted dull purple, and fully half is snow white. Nepaul. (G. C. n. s., xviii. 716.)

C. i. punctatum violaceum (violet-dotted). This differs from *C. i. Maulei* in its roundish-oblong, flat, dorsal sepal, and in the more definite colouring of the whole flower. Lip smaller, shining chestnut colour; petals light olive-green, shaded and netted with dark umber. (Gn., June 24, 1882.)

C. Irapeanum (Irapean). *fl.* about 4in. in diameter; sepals and petals of a uniform rich golden-yellow; lip same colour, stained on the inside with reddish-brown, much inflated; spikes many-flowered. June, July. *l.* broad, pale green, sheathing the stem at the base. *h.* 18in. Mexico, 1844. Stove. (B. R. 1846, 58.)

C. japonicum (Japanese). *fl.* solitary; sepals greenish, covered with red spots; petals and lip white, stained and tinged with crimson, forming a lovely contrast of colours. June. *l.* large, twin, cordate, with crumpled edges, light green. *h.* 6in. to 1ft. Japan, 1874. Hardy. Distinct and uncommon. (G. C. n. s., iii. 625.)

C. lævigatum (smooth).* *fl.*, sepals striped inside with purple; petals 5in. long, very much twisted, beautifully blotched with chocolate, purple, and green; lip yellow; scape hairy, three or four-flowered. Spring. *l.* strap-shaped, long, thick, shining. Philippines, 1865. A very handsome stove species. SYN. *C. philippinense.* (B. M. 5508.)

C. Lawrenceanum (Lawrence's).* *fl.*, upper sepal very broad and round, much exceeding a half-crown piece, white, with numerous dark purplish, shining veins; lateral sepals very small, greenish-white, with dark purple spots; petals divaricate, narrow, green, dull purplish at the top, ciliate; lip very large. *l.* about 1ft. long, having on their inner surface a dark green mosaic on a light greenish-white ground. Borneo, 1878. Stove. (B. M. 6432.)

C. Lowii (Low's).* *fl.*, dorsal sepal downy outside, pale green within; petals long, the basal half greenish, spotted with purple, wholly purple towards the end; margins ciliated; lip large, smooth, and shining, bluntly-oblong, light brown in colour, suffused with purple; spike generally two-flowered, sometimes more. *l.* oblong-ligulate, light green. Borneo, 1847. A curious and beautiful stove species. (G. C. 1847, 765.)

C. macranthum (large-flowered).* *fl.* deep rich purple, solitary, large; lip much inflated. May, June. *l.* medium-sized, bright green. *h.* 9in. to 12in. Siberia, 1829. Hardy. (B. M. 2938.)

C. Mastersianum (Masters's). *fl.* green, white, coppery, brown. Malayan Archipelago, 1879.

C. Morganiæ (Mrs. Morgan's). *fl.*, dorsal sepal 2¼in. long by 1¾in. broad, white, with purplish streaks; lower sepal smaller, with fewer streaks; petals 5in. long and 1in. broad at the widest part, whitish at the base, spotted with reddish-crimson; lip large, rose-colour, veined with crimson, whitish beneath; staminode pale yellow. Hybrid raised by Messrs. Veitch between *C. superbiens* and *C. Stonei.* One of the largest and most beautifully coloured of all Cypripediums. (Gn., Jan. 20, 1883.)

C. nitens (shining). A hybrid between *C. villosum* and *C. insigne Maulei*, described as follows: "Petals long, wavy, light brown, and ochre colour, reticulate, very shining, as in *C. villosum*, the upper sepal and inferior one quite as in *C. Maulei*, but far larger; not a vestige of the narrow base of the superior one, as in *C. villosum*; lip with long lateral horns of sac, and narrower, in the way of *C. villosum.*"

C. niveum (snowy).* *fl.* wholly of a pure soft snowy white, save for a few freckles of cinnamon irregularly scattered over the sepals and petals, usually solitary, rarely twin. *l.* dark green on the upper side, irregularly blotched with lighter markings, the under side of a dull vinous red. *h.* 6in. Malay Archipelago, 1869. Stove. Described as one of the best. (B. M. 5922.)

C. pardinum (leopard-spotted).* *fl.* large; dorsal sepal white, striped with bright green; lower sepal smaller; petals broad and pointed, lower portion yellowish-green, spotted with purplish-black, the rest reddish-purple, and fringed at the edges with fine hairs; lip light bright green, tinged with pale yellow; spike two or three-flowered. *l.* mottled with various shades of green on the upper side, purplish beneath. India, 1869. Stove. (F. M. 51.)

C. Parishii (Parish's).* *fl.*, sepals greenish-white, broad; petals much lengthened out, from 4in. to 5in. long, beautifully undulated, the lower half being of a rich purple; lip purple, 1½in. long, purplish or yellowish-green; scape sometimes 2ft. high, much-branched, three to six-flowered. Summer. *l.* distichous, leathery, and broad. *h.* 2ft. Burmah, 1869. Stove. (B. M. 5791.)

C. parviflorum (small-flowered).* *fl.* comparatively small, fragrant; sepals and petals glossy deep brown-purple; petals narrow and spiral; lip bright yellow, and flattish from above. Stems leafy, 1¼ft. to 2ft. high. North America, 1759. This species much resembles *C. pubescens* in habit and flower. Hardy. (B. M. 3024.)

C. Petri (Mr. Peter Veitch's).* *fl.* white, with green veins; petals light-brownish, green at the base, covered on the whole border with long hairs; lip greenish-brown. Malay Archipelago, 1880. Allied to *C. Dayanum.*

C. philippinense (Philippine). A synonym of *C. lævigatum.*

C. pubescens (downy).* *fl.* large; sepals and petals yellowish-brown, marked with darker lines; lip pale yellow and flattened laterally; petals narrow, spirally twisted, exceeding the large showy lip in length. May, June. Stems 1½ft. to 2ft. high, pubescent. North America, 1790. A handsome hardy species, the root of which is employed as a nervous stimulant, in the United States, and is considered equal to Valerian. The fresh plant sometimes causes the same symptoms of irritant poisoning as *Rhus Toxicodendron.* (G. C. n. s., xix. 785.)

C. purpuratum (purple). *fl.* very like those of *C. barbatum*, except that the dorsal sepal has more pure white at the end. Winter. *l.* beautifully spotted. Sumatra, 1836. (B. R. 1991.)

C. Sedeni. *See* **Selenipedium Sedeni.**

C. selligerum (saddle-bearing).* *fl.*, scapes erect, bearing two or three flowers, which are larger than those of either parent; upper sepal white, with broad blackish-crimson veins; inferior sepal smaller and whitish; petals about 3in. long, deflexed with a partial twist, and traversed by crimson veins; lip much like that of *C. barbatum*, but lighter in colour. A very fine hybrid between *C. barbatum* and *C. lævigatum*, but quite distinct from either. See Fig. 596, for which we are indebted to Messrs. Veitch and Sons.

C. spectabile (showy).* *fl.* large, rounder in outline than is usual in the genus, the pure white sepals and petals being broadly ovate and not longer than the lip, whilst the large pouch, which is of a beautiful soft rich rose colour, is very much inflated. June. *l.* bright and light green, profusely furnished with soft white downy hairs. *h.* 1½ft. to 3ft. Northern United States, 1731. It may be grown successfully either in a pot or the open border, thriving well in the shady part of a Rhododendron bed. See Figs. 597 and 598. (Gn., March, 1877.) There are one or two forms.

Cypripedium—*continued.*

C. Spicerianum (Spicer's).* *fl.*, upper sepal white, with a central purple line; lateral sepals greenish, also with a central line; lip greenish-shining; top of the column white, spotted with violet. East Indies, 1879. This handsome stove species comes close to *C. Fairieanum*. (B. M. 6490.)

C. Stonei (Stone's).* *fl.*, sepals large, broad, of a china-white hue, striped and streaked with red and purple, and shaded with ochreous yellow; petals 4in. or 5in. long, narrow, same colour as sepals; lip dull purple, with reddish veins, large, having a very curious pouch, somewhat resembling a Turkish slipper in form; scape usually three-flowered. *l.* about 1ft. in length, obtuse at both ends, dark shining green. Brazil, 1852. A very handsome species. (B. M. 5349.) There are two or three varieties, all worthy of cultivation.

C. superbiens (superb).* *fl.* very large; sepals and petals large, broad, white, beautifully streaked and dotted with rich brown; pouch also very large, prominent, of a uniform rich brown; scape erect, one-flowered. Spring and summer. *l.* oblong, blunt at the apex, beautifully mottled with dark green upon a yellowish-green ground. Java, 1865. Stove. SYN. *C. Veitchianum*. (F. d. S. 1996.)

C. Veitchianum (Veitch's). A synonym of *C. superbiens*

FIG. 596. FLOWERS AND LEAF OF CYPRIPEDIUM SELLIGERUM.

Cypripedium—*continued.*

C. venustum (handsome).* *fl.* medium size, solitary; sepals and petals greenish-white or pink, striped with bright green, the latter fringed in a somewhat remarkable manner; lip yellowish-green. Winter. *l.* short, dark bluish-green above, curiously mottled and blotched with pale green, whilst the under side is pale purple. Nepaul, 1816. Cool-house species. (B. R. 788.)

FIG. 597. CYPRIPEDIUM SPECTABILE.

C. vernixium (glossy).* A hybrid raised between *C. Argus* and *C. villosum*. *fl.* 4in. or 5in. across solitary, on a stout hairy scape 1ft. high; in shape, they are nearest to *C. villosum*, with the petals longer, narrower, and less deflexed; in colour, they present a remarkable combination of ochraceous brown, crimson, and green, with fainter spots on the petals than in *C. Argus*, and with the glossy varnished surface of *C. villosum*. Of robust habit, the leaves being as large as those of *C. villosum*, with the hieroglyphic markings of *C. Argus*.

C. vexillarium (standard).* A very handsome cross between *C. Fairieanum* and *C. barbatum*, the flowers being exactly intermediate, and combining, in a marked degree, the beauties of both parents. Sepals white, tinged with pale green at the base, and streaked and shaded throughout with soft purple; petals deflected, purple, slightly shaded with green; pouch pale brown, tinged with yellowish-green, and veined with pale green. *l.* pale green, blotched with a darker shade of the same colour. Very rare. (G. C. n. s., xiii. 781, under the name of *C. selligerum*.)

C. villosum (villous).* *fl.* solitary, often measuring 5in. across, and having a fine glossy appearance over their whole surface, which is orange-red, intermixed with light green and dark purple; lip large, protruding, bright light brown. May. *l.* light green, freckled on the lower part with dark spots. *h.* 1ft. India. Stove. (I. H. 1857, 126.)

The following hybrids are as yet very rare in cultivation: *Ainsworthii*, *Arthurianum*, *calanthum*, *calophyllum*, *chloroneurum*, *lucidum*, *marmorophyllum*, *Meirax*, *melanophthalmum*, *patens*, *politum*, *porphyrospilum*, *pycnopterum*, *superciliare*, *Swannianum*, and *tessellatum*.

CYRILLA (named after Dominico Cyrillo, M.D., a professor of botany at Naples, and author of "Collectio Plantarum Rariorum Regni Neapol." 1788, "Tabulæ Botanicæ," 1790; he died in 1799). ORD. *Cyrilleæ*. A small genus, containing two or three species (in reality perhaps forms of one) of greenhouse evergreen shrubs, natives of the southern parts of North America, West Indies, and Brazil. They thrive in a compost of sandy loam and peat. Cuttings root readily, placed in sand, under glass, with a small amount of bottom heat.

C. antillana (Antilles). *fl.* white. July. *h.* 6ft. Antilles, 1824.

C. racemiflora (raceme-flowered). *fl.* white, disposed in slender racemose spikes; corolla stellate, small, stiffish. June to August. *l.* obovate-oblong, shortly stalked. *h.* 6ft. Southern United States, 1765.

CYRILLEÆ. A small order of evergreen shrubs or trees, differing from *Ericaceæ* in their free petals and in the anthers opening in slits. Flowers usually racemose. Leaves undivided, exstipulate. The three genera are: *Cliftonia*, *Costæa*, and *Cyrilla*. There are about eight species, all confined to warmer parts of the New World.

CYRTA. A synonym of **Styrax** (which *see*).

FIG. 598. SINGLE FLOWER OF CYPRIPEDIUM SPECTABILE.

CYRTANTHERA (from *kyrtos*, curved, and *anthera*, an anther; in reference to the curved anthers). ORD. *Acanthaceæ*. This is now generally looked upon as forming a section of the genus *Jacobinia*. Soft-wooded stove plants. For culture, *see* **Justicia.**

C. aurantiaca (orange). A synonym of *Beloperone aurantiaca*.

C. catalpæfolia (Catalpa-leaved).* *fl.* yellow; thyrse large, compact; bracts and sepals linear-subulate. July. *l.* on longish petioles, broad, cordate, acuminate, entire. *h.* 6ft. Honduras, 1848. (B. M. 4444.)

C. chrysostephana (golden-crowned).* *fl.* bright golden-yellow, disposed in a terminal crown-like corymb. Winter. *l.* ovate-acuminate; midrib and the nerves beneath of a vivid red. Stems obtusely tetragonal. Mexico, 1870. (B. M. 5887.)

CYRTANTHUS (from *kyrtos*, curved, and *anthos*, a flower; the flowers bend down from the summit of the scape). SYN. *Timmia*. ORD. *Amaryllideæ*. A genus of about fifteen species of greenhouse bulbs, natives of the Cape of Good Hope; some of them are not yet in cultivation. Flowers incurved, tubular, clavate, six-cleft; segments ovate-oblong; filaments inserted into the tube, conniving at end. Leaves elongate, narrow, sometimes flexuose. For culture, *see* **Hæmanthus.**

C. angustifolius (narrow-leaved). *fl.* orange, drooping; corolla cylindrical. May and June. *l.* linear, obtuse. *h.* 1ft. 1774. (B. M. 271.)

C. lutescens (yellow). *fl.* pale yellow, four to six, narrow, infundibuliform; filaments very short. February. *l.* narrow, linear, acuminate. 1836. A very interesting species. (B. M. 5374.)

C. Macowani (MacOwan's). *fl.* six to eight in an umbel, on short pedicels; tube and limb bright scarlet, the former slightly curved, about 1in. long, narrowed gradually from the base to the throat, where it is ¼in. thick; segments round-oblong, recurving, imbricating; scape terete, purple, a little overtopping the leaves. *l.* one to three, narrow-linear, 6in. long, ¼in. broad. (R. G. 960.)

C. M'Kenii (M'Ken's). *fl.* white, sweet-scented. 1868. This closely resembles in structure *C. lutescens*, but is sufficiently distinct for garden purposes. It is described as a semi-aquatic, and is extremely free-flowering. (G. C. n. s., xiv. 766.)

C. obliquus (oblique-leaved). *fl.* numerous, in umbels; corolla yellowish, variegated with orange-red and green, about 3in. long, drooping, tubular, somewhat fleshy and firm; scape 2ft. or more high. May and June. *l.* coriaceous, lorate, obliquely twisted, blunt, distichous. 1774. (B. M. 1133.)

C. sanguineus (blood-coloured). *fl.*, perianth large, infundibuliform, tubular at the base; limb broad, of six oblong, spreading, recurved, mucronate segments, bright orange-red within, yellowish externally, with six red streaks; scape terete, sub-glaucous, hollow, supporting a solitary flower. August. *l.* dark green, scarcely glaucous, radical, lanceolate, tapering into a rounded petiole, slightly keeled at the back and with a depressed line in front. 1860. A very handsome plant. (B. M. 5218.)

C. uniflorus (one-flowered). *fl.* white, with a broad red stripe down the centre of each segment; limb as long as the throat. May to August. *l.* solitary, linear, glaucous. *h.* 6in. 1816. (B. R. 168.)

CYRTANTHUS (of Schreber). A synonym of **Posoqueria** (which *see*).

CYRTOCERAS (from *kyrtos*, curved, and *keras*, a horn; in allusion to the curved horns of the corona segments). SYN. *Centrostemma*. ORD. *Asclepiadeæ*. A stove evergreen twiner, now included under **Hoya** (which *see* for culture).

C. multiflorum (many-flowered). *fl.*, corolla white, tipped with buff, silky inside: segments of corona quite entire on the inner angles: umbels slightly drooping. August. *l.* almost veinless, oval, acute or acuminated, coriaceous, glabrous. Borneo, 1838. SYNS. (of gardens) *C. floribundum*, *C. Lindleyanum*, *C. reflexum*, *Centrostemma multiflorum*, and *Hoya coriacea*.

CYRTOCHILUM (from *kyrtos*, curved or concave, and *cheilos*, a lip; referring to the form of the lip). ORD. *Orchideæ*. This genus of small epiphytal orchids, now merged by the authors of the "Genera Plantarum" into *Odontoglossum*, contains many species, of which only one or two are worth growing. For culture, &c., *see* **Brassia.**

C. citrinum (citron-coloured).* *fl.* citron-coloured, in a loose raceme, on a scape 1ft. or more long, arising from the base of the pseudo-bulbs: lip very large, sub-rotund-panduriform. April. *l.* in pairs, linear-oblong, rather acute, sub-coriaceous, about 4in. or 5in. long. Pseudo-bulbs clustered, short, ovate, somewhat compressed, furrowed. Central America, 1848. (B. M. 4454.)

Cyrtochilum—*continued.*

C. maculatum (spotted).* *fl.* green and purple spotted, produced during the winter and spring months, on long spikes. *l.* and pseudo-bulbs dark green. Vera Cruz, 1837.

CYRTODEIRA. Included under **Episcia** (which *see*).

CYRTOMIPHLEBIUM. *See* **Polypodium.**

CYRTOMIUM FALCATUM. *See* **Aspidium falcatum.**

CYRTOPERA. *See* **Cyrtopodium.**

CYRTOPHYLLUM. *See* **Fagræa.**

CYRTOPODIUM (from *kyrtos*, curved, and *pous*, a foot; referring to the form of the labellum or lip). SYNS. *Cyrtopera*, *Tylochilus*. ORD. *Orchideæ*. A genus of stove epiphytal orchids, well worth cultivating where plenty of space can be allowed them. Ample pot room is most essential to successful culture. They thrive vigorously in a compost of rich fibrous loam and rotten dung. When growth is completed, and the plant about to flower, a long rest, with little water, should be given, until it recommences to grow in spring, when moisture may be freely applied to the roots, and the temperature increased. Cyrtopodiums require the heat of the East Indian house when in an active condition; at other times, a considerably lower temperature will suffice.

C. Andersoni (Anderson's). *fl.* produced in fine spikes; sepals and petals about equal, yellow, with a faint tinge of green; lip three-lobed, rich yellow, side lobes large, erect, middle lobe spathulate. Spring. Pseudo-bulbs 5ft. high. Tropical America, 1804. (B. R. 1841, 8.)

C. flavum (yellow). *fl.* large, borne in spikes upwards of 2ft. high; sepals and petals rich yellow; lip nearly emerging out of the sepals, pale yellow, except the darker anterior part, where there are some beautiful brown dots on the anterior of the basilar pouch. *h.* 3ft. East Indies, 1831.

C. punctatum (spotted). *fl.*, sepals and petals wavy, yellowish, spotted with brown; lip three-lobed, clear yellow, lateral lobes incurved and brownish-red; bracts large, greenish-yellow, with purplish spots; panicle large, many-flowered. April. Brazil. (B. M. 3507.) This is more floriferous than *C. Andersoni*, but not so tall. Even when out of flower, this species and the one just named form two noble plants, with their fine long curved leaves. They are, however, but rarely seen in cultivation.

C. sanguineum (blood-coloured). *fl.* produced on scapes 1ft. to 1½ft. high; sepals and petals varying from pale red-purple to brown; lip pale and rosy. Summer. Root tuberous. Tropical region of Sikkim. (B. M. 6161.)

CYRTOSTACHYS (from *kyrtos*, curved, and *stachys*, a spike; in allusion to the curved spikes of flowers). ORD. *Palmeæ*. A genus containing two species of stove palms For culture, *see* **Areca.**

C. Renda (Renda). *fl.* greenish-yellow; spike of inflorescence drooping or pendulous. *l.*, pinnæ linear-ensiform, obtusely and unevenly bidentate, greyish underneath. *h.* 30ft. Malay Archipelago. SYNS. *Areca erythropoda* and *Bentinckia Renda*.

CYSTACANTHUS (from *kystis*, a bladder, and *Acanthus*; referring to the inflated flowers). ORD. *Acanthaceæ*. A stove evergreen perennial, thriving in a light sandy loam and fibry peat. Cuttings of young shoots will root, in spring or summer, if planted in sandy soil, in a hotbed, and covered with a bell glass.

C. turgida (inflated). *fl.* white, reticulated with rosy-pink lines, disposed in thyrsoid panicles; throat yellow. April. *l.* opposite, elliptic-lanceolate, 4in. to 7in. long. *h.* 1ft. to 1½ft. Cochin China, 1869. Plant glabrous. SYN. *Meninia turgida*. (B. M. 6043.)

CYSTANTHE. Included under **Richea** (which *see*).

CYSTIDIANTHUS. A synonym of **Physostelma** (which *see*).

CYSTOPTERIS (from *kystis*, a bladder, and *pteris*, a fern). Bladder Fern. ORD. *Filices*. A genus of elegant and graceful little hardy ferns, allied to *Microlepis* and *Woodsia*. Involucre membranaceous, sub-orbicular, inserted by its broad base under the sorus, which, at the beginning, it covers like a hood. Sori globose, placed on the back of the veins. For general culture, *see* **Ferns.**

C. alpina (alpine). *stipes* 2in. to 4in. long. *fronds* 4in. to 8in. long, 1in. to 2in. broad, oblong-lanceolate, tripinnatifid; main rachis winged above; largest pinnæ deltoid, lanceolate, 1in. to 1½in. long, about ½in. broad; pinnules ovate-rhomboidal; segments

Cystopteris—*continued.*

slightly toothed. *sori* small, two to twelve to a pinnule. Mountains of Europe (Teesdale, England) and Asia Minor.

C. bulbifera (bulb-bearing). *sti.* 4in. to 6in. long. *fronds* 6in. to 12in. long, 3in. to 4in. broad at the widest part, ovate-lanceolate, often much elongated upwards, bi- or tripinnatifid; lower pinnules lanceolate, 2in. to 3in. long; segments linear-oblong, very slightly toothed. *sori* two to twelve to a pinnule. North America, 1638. Large fleshy bulblets are formed in the axils of the upper pinnæ, which fall to the ground and become new plants.

C. fragilis (fragile).* *sti.* 2in. to 4in. long. *fronds* 4in. to 8in. long, 1½in. to 2in. broad, ovate-lanceolate, tripinnatifid; largest pinnæ 1in. to 1½in. long, ½in. to ⅝in. broad; pinnules oblong-rhomboidal; segments bluntly or sharply toothed. *sori* two to twelve to a pinnule. Temperate regions of both Northern and Southern hemispheres. This elegant little species is admirably adapted for growing in fern cases; it has numerous more or less distinct varieties, the best of which are described below. Other forms are: *decurrens*, *interrupta*, *obtusa*, and *sempervirens*.

C. f. angustata (narrow). Whole frond attenuated, and sometimes even depauperated. Rarely exceeding 9in. in height.

C. f. dentata (dentate). *fronds* bipinnate, bluntly toothed. *sori* very close to the margin. *h.* 6in.

C. f. Dickieana (Dickie's). *fronds* 4in. to 5in. in height, rich dark green; pinnæ all bending down somewhat, and overlapping each other; pinnules slightly and bluntly toothed. An elegant form.

C. montana (mountain). *sti.* slender, erect, 6in. to 9in. long. *fronds* about 6in. each way, deltoid, quadripinnatifid; lowest pinnules deltoid-lanceolate, 1in. to 1½in. long, about ½in. broad; segments cut down to the rachis below; lobes oblong, deeply and sharply toothed. *sori* small, eighteen to twenty-four to the lower segments. *rhiz.* wide creeping. Scotland (very rare), Mountains of Northern hemisphere.

CYTISUS (etymology obscure; according to some, from Cythnus, one of the Cyclades, where some of the species were first found). ORD. *Leguminosæ*. A genus of about thirty-eight species of shrubs (rarely spinous), confined to Europe, Northern Africa, the Canary Islands, and Western Asia. Flowers yellow, purple, or white, not honeyed. Leaves one to three-foliolate, or absent; stipules minute. Two species (*C. canariensis* and *C. racemosus*) are largely grown for greenhouse decoration, in spring; most of the others are either hardy trees, or shrubs, of the easiest possible culture. The latter are readily increased by seed, which are generally produced in abundance; or by layers. Some of the rarer kinds may be grafted on a commoner stock, or on seedling plants of the allied genus, *Laburnum*.

Cultivation of Greenhouse Species. Propagation is effected, in spring, by cuttings of the young wood, which, if taken when about 3in. long (with a heel preferred), inserted under a bell glass, and placed in heat, or in a close frame, will root readily. If gradually hardened, potted, and grown on, small flowering specimens may be obtained the following spring. As soon as the plants have finished flowering, they should be cut back, and kept in a close temperature of about 55deg., in order to induce growth. When started, any repotting required should be seen to, and the plants returned to a similar place, and kept syringed. When established in the new soil, plenty of air should be admitted, and a thin shading applied in summer. The growing season will be completed about August; the plants should then be placed outside until the appearance of frost. Keep quite cool all the winter, and gradually introduce a few specimens to a warmer house, in January, when the flowers will soon open. A succession may be kept up, if plants are available, until June. Turfy loam, with a small proportion of lumpy peat, and some sharp sand added, forms a suitable compost; and the plants, when opening their flowers, are much benefited by doses of liquid manure. *C. racemosus* forms nice little specimens, in 5in. or 6in. pots, for room decoration, where they keep good a long time. They may afterwards be grown on to form plants 3ft. high and nearly as much through. *C. canariensis* requires similar treatment, but does not grow quite so freely. It is very useful for flowering later in the season than the other species noticed.

C. Adami. *See* **Laburnum Adami.**

Cytisus—*continued.*

C. albus (white). *fl.* white, in fascicles, disposed in long racemes. May. *l.* simple and trifoliate, sessile; leaflets linear-oblong, silky. Branches tereto, twiggy. *h.* 6ft. to 10ft. Spain and Portugal, 1752. Hardy.

C. alpinus. *See* **Laburnum alpinum.**

C. Ardoini (Ardoino's). *fl.* yellow, one to six in the axils of each leaf, usually secund; calyx campanulate, scarious in upper half, hairy; lips divergent; pedicels about twice the length of the calyx, without bracteolæ, hairy. Spring. *l.* trifoliolate; leaflets obovate, hairy, small, silky when young. Stems rod-like, generally decumbent, many springing from a knotted and twisted stock. *h.* 4in. Mountains of the Maritime Alps, 1867. An extremely pretty species, somewhat resembling *Genista*. (Fl. Ment. 58.)

C. austriacus (Austrian). *fl.* yellow, terminal, somewhat umbellate. June. *l.*, leaflets lanceolate, attenuated at both ends. Branches twiggy, terete, and, as well as the leaves, clothed with adpressed strigose pubescence. *h.* 2ft. to 4ft. East Europe, 1741. Hardy.

C. biflorus (two-flowered). *fl.* yellow, oblong, about 1¼in. long, longer than the leaves, parallelly paired; peduncles short, very thick; calyx pale green, membranous, villous, twice shorter than the vexillum, tubularly oblong, slightly swollen and compressed, shallowly bilabiate; lips straight, contracted. May. *l.* ternate, about 1in. long, silkily furred underneath; leaflets elliptically-oblong, rather pointed, nearly of the same length as the petiole, with a small mucro; petiole silkily furred. Branches smooth, silkily furred, loosely and sparsely-leaved. *h.* 3ft. Hungary, 1760. Hardy deciduous. (B. R. 308.)

FIG. 599. FLOWERING BRANCH OF CYTISUS SCOPARIUS.

Cytisus—*continued.*

C. canariensis (Canary Islands).* *fl.* yellow, in elongated, many-flowered, secund racemes; bracts and bracteoles setaceous. June to August. *l.* shortly-stalked, trifoliate; leaflets obovate-oblong, acute. Canary Islands. A much-branched dwarf shrub, everywhere softly villose.

C. capitatus (headed). *fl.* yellow, numerous, capitate at the tops of the branches (sometimes lateral in the autumn). June. *l.*, leaflets ovate-elliptic, villous. Branches straight, hispid. *h.* 2ft. to 4ft. Europe, 1774. Hardy. (L. B. C. 497.)

C. filipes (thread-stemmed). *fl.* white. March. Branches slender, pendulous. Teneriffe, 1838. A very elegant conservatory plant.

C. hirsutus (hairy).* *fl.* yellow, lateral, on very short pedicels, aggregate. June. *l.*, leaflets obovate, villous beneath. Branches twiggy, terete; young ones hispid; adult ones smooth. Europe, 1739. Hardy decumbent species. (Fl. Ment. 28.)

C. Laburnum. *See* **Laburnum vulgare.**

C. nigricans (blackish). *fl.* yellow; racemes elongated, terminal, erect. June. *l.* trifoliolate, stalked, clothed with adpressed pubescence beneath, as well as the branches, calyces and legumes; leaflets elliptic. Branches terete, twiggy. *h.* 3ft. to 6ft. Europe, 1730. Hardy. (B. R. 802.)

C. proliferus (proliferous). *fl.* white, lateral, umbellately aggregate. April and May. *l.*, leaflets elliptic, and, as well as the calyces, silky. Branches terete, velvety. *h.* 2ft. to 4ft. Teneriffe, 1779. Greenhouse. (B. R. 121.)

C. purpureus (purple).* *fl.* purple, axillary, solitary, on short pedicels. May. *l.*, leaflets oblong. Stems procumbent, twiggy. Plant glabrous. European Alps, 1792. Hardy. This is a very beautiful shrub when in flower, but has a better effect when grafted on a rather tall Laburnum. (B. M. 1176.)

C. racemosus (racemose).* *fl.* bright yellow, disposed in a terminal spike 6in. long. July. *l.* trifoliate. *h.* 3ft. Said to have come from the Peak of Teneriffe, 1835; probably, however, a plant of garden origin. Greenhouse evergreen. *C. Everettianus* (R. H. 1873, 390), a garden form, with flowers a couple of shades deeper in colour, is similar to this in habit, &c.

C. scoparius. Common Broom. *fl.* yellow, axillary, pedicellate, solitary. April to July. *l.*, trifoliate, petiolate; upper ones simple, and, as well as the leaflets, oblong. Branches angular. *h.* 3ft. to 10ft. Europe (Britain). Hardy. See Fig. 699. There are three or more forms of this species.

C. sessilifolius (sessile-leaved). *fl.* yellow; racemes terminal, erect, short; calyces each having a three-leaved bract just under it. May. *l.*, leaflets three, ovate; floral leaves almost sessile. Branches terete. *h.* 4ft. to 6ft. Plant quite smooth. South Europe, 1629. (B. M. 601.)

C. Weldeni (Welden's). A synonym of *Petteria ramentacea.*

CZACKIA. A synonym of **Paradisia** (which *see*).

DABŒCIA (called St. Dabeoc's Heath in Ireland). ORD. *Ericaceæ.* A very pretty shrub, having much the habit of a species of Heath, and adapted for decorating the front of shrubberies, or for growing on rockwork or banks. It thrives in a sandy peat soil, with a little loam added. Increased by layers, in autumn; or by cuttings, placed under a handlight.

D. polifolia (Polium-leaved).* St. Dabeoc's Heath. *fl.* white, rose, or purple, very elegant, drooping from the short pedicels in a loose terminal raceme; corolla ovoid, ventricose, shortly four-lobed; lobes broad, recurved, imbricated. June to September. *l.* small, the lower ones ovate, the upper ones narrow, all green above, and very white beneath. Branches ascending, clothed with short, rather viscid hairs. *h.* 1ft. to 2ft. Common on the heathy wastes of South-western Europe, Mayo and Connemara in Ireland, and the Azores. SYN. *Menziesia polifolia.*

DACRYDIUM (from *dakrudion*, a diminutive of *dakru*, a tear; referring to the resinous exudations). ORD. *Coniferæ.* Very ornamental trees, somewhat resembling the Spruce in appearance, but with slightly pendulous branches. Male catkin ovoid, girded by imbricating bracts at base; stamens numerous, imbricate. A mixture of sandy loam and peat suits them. Propagated by cuttings, made when ripe, and placed in sand, under a glass. Generally speaking, none of the species are suited to our climate; but *D. cupressinum* and *D. Franklinii* have, under exceptional circumstances, proved successful.

D. cupressinum (Cypress-like).* *l.* pale green, small, closely imbricated all round. Branches weeping. *h.* 60ft. to 100ft. (in England, 16ft.). New Zealand, 1825. A pyramidal tree.

Dacrydium *—continued.*

D. elatum (tall). *l.* crowded, without order, erectly spreading, mucronate. *h.* 60ft. Palo Penang, 1830. A large timber tree, of slow growth.

D. excelsum (lofty). *l.* loosely imbricate, subulate, compressedly tetragonal, mucronate, glaucous, with depressed angles. *h.* 200ft. New Caledonia.

D. Franklinii (Franklin's). *l.* scale-like, imbricated. Branches short, horizontal; branchlets numerous, slender, pendulous. *h.* 100ft. Tasmania, 1844. Timber with an aromatic fragrance.

D. Mai (Mai). *l.* linear-obtuse, with a callous point; margins revolute, green above, glaucous beneath. *h.* 80ft. Tasmania, 1844.

D. taxoides (Yew-like). *l.* alternate, closely placed, falcate, obtuse at the ends, attenuated and twisted at the base, ¼in. to ¾in. long, and one-and-a-quarter lines broad; midribs on the upper and under surfaces prominent. Branches sub-verticillate, having a purplish tint when young. New Caledonia. A conical shrub.

DACTYLICAPNOS THALICTRIFOLIA. *See* **Dicentra thalictrifolia.**

DACTYLIS (from *daktulis*, a finger's breadth; apparently in allusion to the size of the clusters). ORD. *Gramineæ.* This genus is closely allied to *Festuca*, from which it differs in that the spikelets are densely crowded in thick, one-sided clusters, arranged in an irregular short spike or slightly-branched panicle. The only species is that described below; it is one of the best and strongest-growing kinds of our native grasses, and is well adapted for sowing alone on marshy land.

D. glomerata (glomerate). Cock's foot Grass. *fl.*, spikelets several flowered, crowded in one sided clusters, forming a dense, branching panicle; glumes and lower palet herbaceous, keeled, awn-pointed, rough, ciliate on the keel, the five nerves of the latter converging into the awn-like point; the upper glume commonly smaller and thinner. June. *l.* flaccid, but rough on the edges. *h.* 1ft. to 2ft. In meadows, pastures, woods, and waste ground throughout Europe, Central and Russian Asia (except the extreme north); abundant in Britain. Perennial. (Sy. Fn. B. 17—.) *D. g. variegata* (variegated) is a very pretty form of this, and is extensively employed for bedding purposes.

DACTYLOCTENIUM (from *daktylos*, a finger, and *ktenion*, a little comb; alluding to the digitate and pectinate spikes). ORD. *Gramineæ.* A genus of several species, for the most part natives of Africa. Spikelets several-flowered, with the uppermost flower imperfect, crowded on one side of a flattened rachis, forming dense pectinate spikes two to five in number, digitate at the summit of the culm; glumes compressed, keeled, and sub-herbaceous, the exterior one cupsidate. The species are mostly annuals, little known to cultivation.

DACTYLOSTYLES. *See* **Zygostates.**

DADDY LONG LEGS. *See* **Crane Fly.**

DÆMIA (its Arabic name). ORD. *Asclepiadeæ.* A genus comprising six species of stove evergreen twiners, natives of tropical Asia and Africa. Flowers umbellate; corolla sub-rotate, with a short tube; corona double, the outer one an annular five or ten-lobed membrane. Leaves opposite, cordate. They thrive in a compost of fibry peat and loam, with a small quantity of sand added. Cuttings of firm side shoots will root in sandy soil, if placed under a glass, in bottom heat.

D. extensa (extended). *fl.*, margins of corolla ciliated; peduncles and pedicels elongated, filiform. July. *l.* roundish-cordate, acuminated, acute, auricled at the base, downy. East Indies, 1777. SYN. *Raphistemma elatum.* (B. M. 5704.)

DÆMONOROPS (derivation doubtful, probably from *dæmon*, a deity, and *ops*, appearance; alluding to the beauty of the plant). ORD. *Palmæ.* Very elegant stove palms, now included, by Bentham and Hooker, under *Calamus*, but differing from that genus chiefly in having its flowers scattered along the spikes, and also in the spathes entirely encircling the young spikes. For culture, *see* **Calamus.**

D. melanochætes (black-bristled). *l.* pinnate; pinnæ long, narrow, and pendent; petioles sheathing at the base, where they are armed with very long sharp spines, with brown tips and much swollen bases. *h.* 150ft. Malay Archipelago. An ornamental plant, of a very dark green colour.

Dæmonorops—*continued.*

D. ornatus (adorned). A very pretty species, having finely-cut pinnate leaves. At present, it is very rare. Java, 1875.

D. palembanicus (Palembang). *l.* pinnate, broadly ovate; pinnæ numerous, narrow, elongated; petioles erect, armed at the back with somewhat stout deflexed spines, which are thickened at the base; young leaves of a bright cinnamon brown. Sumatra, 1872.

D. periacanthus (ring-spined). *l.* broadly ovate, pinnate; petioles furnished with numerous spines, which are set on in irregular rings; young leaves nearly straw-coloured. *h.* 15ft. Sumatra, 1872. This species resembles *D. palembanicus.*

D. plumosus (plumed).* *l.* of a rich dark green, remarkably plume-like, pinnate, 2ft. to 4ft. or more in length; pinnæ 1ft. long, less than 1in. wide, tapering to a narrow point, pendent; petioles densely armed with stout black spines, which are white at the base. India, 1870. A very elegant species.

DAFFODIL. *See* **Narcissus.**

DAHLIA (named after Dr. Dahl, a Swedish botanist, and pupil of Linnæus). SYN. *Georgina.* ORD. *Compositæ.* A popular genus of herbaceous plants, having a double involucre, no pappus, and a large scarious bracteole at the base of each floret. There are but a small number of species, and all are natives of Mexico and Central America.

The Dahlia was first introduced into this country from Spain, in 1789, by the Marchioness of Bute. This importation, and another made by Lady Holland, in 1804, were, however, lost to cultivation. A third stock was afterwards brought from France, about the year 1815, and from this the numerous forms have been obtained. It is most probable that nearly all the types and varieties of the common garden Dahlia now in cultivation have originated from *D. coccinea* (see Fig. 602), *D. Mercki* (see Fig. 605), and *D. variabilis* (see Fig. 606). Being among the best of outside autumn-flowering plants, and, moreover, easily propagated and grown, Dahlias form indispensable subjects for flower-garden decoration, suitable for those of either large or small dimensions.

There are four important classes into which Dahlias may be divided, in addition to a few minor ones, containing only a limited number of representatives. These are known as Show, Fancy, Bouquet or Pompone, and Single-flowered. *D. Juarezii* represents a small class, with semi-double flowers, distinct from any of the others. *D. excelsa* and *D. imperialis* reach a great height before flowering, and are best grown in pots for greenhouse decoration in autumn and winter. Show Dahlias are all double, and require to have large flowers of the most perfect form to be considered good. Selfs and pale-coloured flowers, edged or tipped with a darker colour, are included under Show varieties. Flowers of a similar size, but having florets dark-coloured at the base, and tipped or striped with a paler colour or white, are known as Fancy varieties. The Bouquet or Pompone, also those sometimes termed the Bedding section, have double flowers of a much smaller size; various colours are included, and all are invariably very pretty; the habit is dwarf and compact, constituting these the best for bedding purposes, and the flowers are most useful for cutting, when Double ones are required. The Single-flowered varieties have again become very popular, and are amongst the most beautiful and useful subjects for cut flowers. The form and size of flower-heads in all the sections have now attained a high degree of excellence. White, yellow, red, and purple, with a great variety between of these colours intermixed, are also represented in each of the large classes.

PROPAGATION. Dahlias are propagated by seeds, cuttings, division of the roots, and sometimes by grafting.

Seeds. These are produced by the Single varieties in large quantities, but not so freely by the Doubles. Obtaining seeds from the latter is mostly restricted to florists who make this plant a speciality, and who do it with a view to raising new varieties. The colours of the Single flowers are reproduced by this method

Dahlia—*continued.*

tolerably true to character, and only those that are good should be selected from which to save seed. Sow thinly in pans, at the end of March, and place on a hotbed or in a propagating house. The seedlings will soon appear, and should then be placed singly in pots, and grown on for a time in the same temperature. Repot as becomes requisite, and gradually harden off in a cool frame, ready for putting outside at the end of May. If liberally treated, large plants and good flowers may be obtained the first season.

Cuttings. This is the method of propagation usually adopted, and is easily accomplished in spring. The roots having been stored and kept dry in winter, should be introduced to bottom heat at the beginning of February, and these, but not the crowns, should be covered with soil. A slight syringing daily will be sufficient to induce the production of shoots, and each of these may be removed, if required, as soon as it has two joints. If placed singly in small pots of light leaf soil and sand, and plunged in a close frame, roots will soon be emitted, and the plants may be hardened, repotted, and transferred to cooler positions, as recommended for seedlings. Cuttings of Dahlias root best when taken in this way quite young; and, as a succession soon appears, any variety may be readily increased. The tops of the young shoots also strike freely in summer.

Division of Roots. All Dahlias have several fleshy

FIG. 600. DAHLIA, FLESHY ROOTSTOCK.

tuber-like roots (see Fig. 600) that may be separated singly for propagating after they are started in spring, allowing

FIG. 601. DAHLIA ROOTS, divided for Propagating.

one shoot to each (see Fig. 601). If these are inserted in large pots, vigorous plants may be obtained for placing outside later on; but the quantity will be limited to the number of tubers when divided, and will not generally be so many in the end as might have been procured from cuttings.

Grafting is occasionally practised for preserving new varieties throughout the winter, when otherwise there would be a danger of losing them. The plan is to take a shoot with two joints, cut it below the bottom one, and remove a portion of the skin on one side. A fleshy root from a hardier sort should be prepared, by having a similar-sized hole or incision made for the reception of the graft. This should be tied in, and the matting covered over with clay, the whole being afterwards potted and placed under a hand glass until a union has taken place. To keep the scion alive in winter, it must be kept growing slowly, and cuttings from it may be obtained in spring. This system of propagation is not often resorted to.

CULTIVATION. Being vigorous-growing plants, Dahlias require a rich, moderately heavy soil to give the best results; but their cultivation will often prove successful under conditions widely varied in this respect. When it

Dahlia—*continued.*

is proposed to plant in masses, the ground should be trenched, and manure added if the soil is naturally poor. It is not advisable to apply strong manure in spring, as over-luxuriance in foliage would thereby be encouraged at the expense of the production of flowers. A light, open

FIG. 602. FLOWERING SHOOT OF DAHLIA COCCINEA.

position, free from the shade of trees, is best; but surrounding shrubs or dwarf plants are often an advantage to Dahlias by protecting them from high winds. Mixed flower borders, backed up with shrubs, are good positions, and a fine effect may be produced in autumn, especially with the best of the Single varieties, by planting in masses, such as large circular beds. The Dwarf Pompone section is best adapted for use in smaller beds, and these, or others, may be kept still lower by pegging down when young. Planting out should not be attempted before the beginning of June, in most localities, as the

FIG. 603. FLOWER-HEAD OF DAHLIA IMPERIALIS.

least exposure to frost causes much injury. The heights of the different varieties must be ascertained, and their

Dahlia—*continued.*

respective positions fixed accordingly. From 3ft. to 6ft. apart is none too much space for strong, tall-growing varieties. Seedlings, or late-struck cuttings, will not require quite so much. Water well after planting, and apply a temporary stake to each, for a time. Dahlias are much benefited by frequent applications of water during summer, and by liquid manure after the buds are formed. If exhibition blossoms are required, the shoots and flower buds must be thinned out in the younger stages of growth; but otherwise it will be unnecessary to do so. Permanent stakes of about 4ft. in height, must replace the others when the plants are established and growing. The most useful Dahlias to cultivate for cut flowers are the Single and Pompone sections; and the most distinct and highly-coloured sorts should be selected.

Storing. Dahlias may remain in the ground until the tops are destroyed by frost, when they should be cut down to within 6in. of the ground, and afterwards lifted.

FIG. 604. FLOWER-HEAD AND LEAF OF DAHLIA JUAREZII.

Remove as much soil as possible with a pointed stick, attach the label of each to the stem, and store away in a dry, cool, frost-proof place. Looking over occasionally to remove any part of the roots that may be damping, is all that is required until starting again the following spring. Young plants, raised either from seeds or cuttings, will supply large roots in the autumn of the same season.

INSECTS. Earwigs are most destructive to Dahlias, by eating out the young points of the shoots, and afterwards the florets, before they are developed. Small flower-pots, half-filled with dry moss, and inverted on the tops of the stakes, or hollowed bean stalks placed amongst the branches, are the best-known traps. They should be examined each morning, and any Earwigs found therein destroyed.

A list of the species, and the most striking of what may be called the "botanical" varieties, is given below.

D. bidentifolia (bidentate-leaved). A synonym of *D. coccinea.*

D. coccinea (scarlet). *fl.-heads* with scarlet ray-florets and yellow disk; outer involucral bracts five, reflexed; inner series numerous. Autumn. *l.* pinnate, scabrous. *h.* 3ft. to 4ft. SYNS. *D. bidentifolia* and *Georgina Cervantesii.* See Fig. 602. (B. M. 762.)

D. crocata (yellow). *A synonym of D. variabilis.*

D. excelsa (tall). *fl.-heads* pale lilac-purple, 4in. across. *l.* doubly pinnatipartite, 2ft. long by about 2ft. broad. Stem perennial, very thick, becoming woody, growing to the height of

Dahlia—*continued.*

20ft. and upwards, less branched, and assuming more the aspect of a tree than any other species. (B. 88.)

D. glabrata (smooth). A synonym of *D. Mercki.*

FIG. 605. FLOWERS AND LEAF OF DAHLIA MERCKI.

D. gracilis (slender). *fl.-heads* brilliant orange-scarlet; involucral bracts small, narrow. Summer and autumn. *l.* bipinnate, glabrous; leaflets ovate, coarsely crenate. *h.* 4ft. to 5ft. (R. G. 861.)

D. imperialis (imperial).* *fl.-heads* white, tinged with lilac, and streaked with blood-red at the base, drooping, bell-shaped; disposed in large spreading panicles, 3ft. to 5ft. across. *h.* 10ft. to 12ft. Mexico, 1863. This remarkable and beautiful species, from its not flowering till late in the autumn, does not fully perfect itself out of doors, and should, consequently, be removed to the greenhouse or conservatory early in October. See Fig. 603. (B. M. 5183.)

D. Juarezii (Juarez's).* Cactus Dahlia. *fl.-heads* brilliant scarlet; florets overlapping each other, and varying in length, thus giving the flower an irregular appearance. *h.* 3ft. A form which originated under cultivation in Mexico. Very distinct and remarkable; well worth the most extensive cultivation. See Fig. 604.

Dahlia—*continued.*

D. Mercki (Merck's). *fl.-heads* white and yellow, or lilac and yellow, small, with a good outline. October. *h.* 2ft. to 4ft. 1839. SYN. *D. glabrata.* See Fig. 605, for which we are indebted to Mr. T. S. Ware. (B. M. 3878.)

D. M. Decaisneana (Decaisne's). *fl.-heads* purple, with a golden disk, small, numerous. *l.* pinnate, divided. *h.* 3ft. (R. H. 1864, 31.)

D. superflua (superfluous). A synonym of *D. variabilis.*

D. variabilis (variable). *fl.-heads* very variable. August and September. 1789. This is probably the first species introduced, and whence by far the majority of forms now very common, have originated. See Fig. 606. In the wild state, the central, or disk florets are said to be yellow, small, and tubular, and the marginal, or ray florets, only conspicuous and highly coloured in some shade of scarlet. SYNS. *D. crocata, D. superflua.*

D. viridiflora (green-flowered). *fl.-heads* pure self-green, Pompone size, double, and full-petalled. A curious monstrosity, of garden origin.

FIG. 606. FLOWERING BRANCH OF A DOUBLE VARIETY OF DAHLIA VARIABILIS.

VARIETIES. Subjoined is a large selection of the best garden Dahlias cultivated at the present time, including many of the new ones distributed in 1884. As good varieties are numerous, and additional improved forms in some way obtained annually in each section, it is more than likely that others of equal merit have been omitted. The varieties with single flowers being now so numerous, a classification has been arranged and adopted by Mr. T. S. Ware, of Tottenham, who makes these plants a speciality (and to whom we are indebted for Figs. 607 to 611), for grouping them into four sub-divisions or classes, according to the shape of the flowers. Fig. 607 represents two varieties of the section with Stellate or Star-like flowers; these are rather small, but very floriferous, and of a dwarf bushy habit. Another form is shown in Fig. 608, where the flowers are Flat. Fig. 609 shows those with beautifully Reflexed flowers, that are invariably solid and massive, and well adapted for exhibition. The fourth, and last, group is represented in Figs. 610 and 611, where the flowers are only Slightly Reflexed; these come between the Flat and the Much Reflexed sections, and include some fine varieties for exhibition. The figures are only intended

Dahlia—*continued.*

to represent the classification of the flowers according to their shape, and do not refer to the colours, as a great diversity of these is included in each group. Many are self-coloured; others, which are edged, blotched or striped, are termed Fancy varieties of the Single-flowered class.

Show Varieties. ACME OF PERFECTION, primrose-yellow; ALEXANDER CRAMOND, maroon, shaded crimson, good; ARBITRATOR, delicate fawn; AURORA, golden-buff, distinct; BESSIE, lilac, full; BURGUNDY, dark puce, suffused light purple, good; CARDINAL, rich scarlet, full, of fine form; CHARLES LIDGARD, deep yellow, edged crimson; CHARLES TURNER, yellow, edged and tipped crimson; CHARLOTTE DORLING, large white, tipped; CONDOR, peculiar colour, buff, shaded orange; COUNTESS OF LONSDALE, rosy-lilac; CREAM OF THE VALLEY, cream, tinged salmon, fine form; CRITERION, bright rose, good; CROWN PRINCE, pale buff, full; DAUNTLESS, dark orange, shaded; DELIGHT, creamy-white, edged purple; DEWDROP, deep primrose; DUKE OF ALBANY, rich crimson, fine form; EDWARD PURCHASE, bright crimson; ETHEL BRITTEN, blush-white, edged purple; FLAG OF TRUCE, white, tipped lilac; FRANK RAWLINGS, purplish-magenta,

Dahlia—*continued.*

fine flower; GEORGE RAWLINGS, dark maroon, finely cupped; GOLDFINDER, yellow, tipped red; GRAND NATIONAL, yellow, very fine, new; HERBERT TURNER, white, tinged lilac; HOPE, bright rosy-lilac, large; H. W. WARD, yellow, heavily edged with crimson; IMPERIAL, deep purple, shaded lilac, fine form; JAMES COCKER, large, purple, very fine; JAMES VICK, purplish-maroon; JOHN COCKER, glossy black; JOHN NEVILLE KEYNES, fine yellow; JOHN WYATT, deep scarlet; JULIA WYATT, creamy-white, large and good; LEAH, golden-yellow; LILLIE WARD, white, tinged pale rose; MAJOR CORNWALLIS WEST, scarlet, shaded orange; MRS. GLADSTONE, delicate soft pink, new and very fine; MRS. HARRIS, white, edged pale lilac, good; MRS. HENSHAW, white, large and full; MRS. P. WYNDHAM, yellow, edged rosy-purple; MRS. W. HASKINS, fawn, distinct and good, new; MURIEL, fine clear yellow, new; OVID, rich purple, extra good; ROSETTA, large purple; RUBY GEM, ruby-crimson, small yellow tip, new; SHIRLEY HIBBERD, dark crimson; STATESMAN, purplish-crimson, new; SUNBEAM, bright clear buff, good form; THOMAS GOODWIN, dark maroon; WALTER H. WILLIAMS, bright scarlet, large and fine; WILLIAM RAWLINGS, rich crimson-purple.

Fancy Varieties. ALDERMAN, lilac, striped and spotted purple,

FIG. 607. SINGLE DAHLIAS (1) MAGPIE AND (2) FREEDOM—VARIETIES ILLUSTRATING STELLATE FLOWERS.

Dahlia—*continued.*

new; ANNIE RAWLINGS, pure white, striped lake; ARABELLA, buff, scarlet and crimson stripes, new; BARNABY RUDGE, fawn, spotted crimson; BEAUTY, yellow, tipped rose; CHARLES WYATT, rose, flaked crimson; CHORISTER, fawn, striped crimson and rose; DRAGON, yellow, striped bright crimson; DUCHESS OF ALBANY, pale orange, rich crimson stripes, new; FANNY STURT, red, tipped white; FLORA WYATT, orange, flaked red; FREDERICK SMITH, lilac, striped purple; GEORGE BARNES, pale lilac, striped crimson; HENRY GLASSCOCK, buff, striped crimson; HERCULES, yellow, striped crimson; HUGH AUSTIN, orange-scarlet, striped dark red; JAMES O'BRIEN, yellow, crimson and rose stripes; JESSIE

Dahlia—*continued.*

MAB, red, tipped and edged white; R. DEAN, yellow, flaked crimson; REBECCA, lilac, striped crimson, new; REGULARITY, blush-white, striped crimson; REV. J. B. M. CAMM, yellow, flaked red, large; ROBERT BURNS, lilac, flaked dark crimson; SAM BARTLETT, blush, striped crimson; WILLIAM ADY, lilac, striped purple, fine; WIZARD, fawn, striped maroon, tipped white.

Bedding and **Bouquet or Pompone Varieties.** CAMELLIÆFLORA, pure white, rather large; COMTE VON STERNBERG, yellow, tipped white, small; CRIMSON BEAUTY, maroon-crimson; CUPID, white, suffused with rose; DORA, primrose and white,

FIG. 608. SINGLE DAHLIAS (1) DR. MOFFAT AND (2) DANGER—VARIETIES ILLUSTRATING FLAT FLOWERS.

McINTOSH, red, distinct white tips; JOHN FORBES, fawn-colour, striped maroon, fine; JOHN LAMONT, maroon, striped black; LADY ANTROBUS, red, pure white tips; LOTTY ECKFORD, white, striped purple, fine form, new; LUCY FAWCETT, pale yellow, spotted crimson; MADAME SOUBEYRE, rosy-lilac, striped carmine; MANDARIN, yellow, mottled crimson; MISS L. LARGE, puce, striped and spotted with crimson; MONARCH, deep crimson, tipped white; MRS. SAUNDERS, yellow, tipped white, extra fine; ORACLE, deep yellow, striped crimson; PEACOCK, dark maroon, tipped white, large; PROFESSOR FAWCETT, dark lilac, striped chocolate; QUEEN

good habit; DOVE, white, tipped rosy-lilac, pretty; E. F. JUNGKER, amber, compact flower; FAIR ELLEN, white, shaded purple; FLORA MACDONALD, pale primrose; GEM, rich scarlet; GEORGE THOMPSON, pure yellow, free; GERMAN FAVOURITE, crimson-lake, deep edge; GOLDEN NUGGET, bright golden-yellow; HEBE, blush, edged rose; JOHN SANDY, buff, tipped red; LADY BLANCHE, pure white, small, fine for cutting; LEAH, yellow, good; LITTLE ARTHUR, bright orange-scarlet; LITTLE BEAUTY, lilac, tipped white; LITTLE DEAR, blush white, tipped rose; LITTLE WONDER, scarlet; MDLLE. VALENTINE FACONET, white

Dahlia—*continued.*

and purple, striped; NEMESIS, maroon, tipped white; NORTHERN LIGHT, scarlet, showy; PRINCE OF LILIPUTIANS, deep maroon, very fine; PURE LOVE, pale lilac, extra good; THE PET, dark maroon, white tip; TITANIA, small yellow, free, and good for cutting; TRIUMPH, scarlet; WHITE ASTER, white, free and good.

Single Varieties, including a selection from all the various-shaped flowers. ARGUS, deep magenta, shaded rose; B. BARKWAY, deep scarlet, broadly edged orange, new; BEACON, fiery-crimson, very fine (see Fig. 610, 1); BEAUTY OF CAMBRIDGE, fiery-crimson, fine flower; BEDDING GEM, orange-scarlet, dwarf, very floriferous, new; BRIDAL WREATH, creamy-white; CETYWAYO, rich blackish-maroon, new; CHERRY, bright cherry, shaded rose; CHRISTINE, pale silvery-pink, good; DANGER, glowing scarlet, small flower (see Fig. 608, 2); DARKNESS, intense dark mulberry, distinct; DR. MOFFAT, dark maroon, margined crimson, new (see Fig. 608, 1); FRANCIS FELL, bright rosy-purple; FREEDOM, scarlet-lake, new and fine (see Fig. 607, 2);

Dahlia—*continued.*

GEORGE CLARK, deep crimson, edged pale purple, extra fine (see Fig. 611); HARLEQUIN, deep rose, centre band of purple in each petal; H. W. PETITT, bright purplish-rose, edged lilac; IMOGENE, primrose, shaded lilac; LUCY IRELAND, rich magenta, suffused crimson, very fine (see Fig. 609, 2); LUTEA GRANDIFLORA, rich yellow, large and free; MAGPIE, cerise, tipped white, new and distinct, good (see Fig. 607, 1); MAUVE QUEEN, rich mauve, fine large flower; MILLIE GIBBS, white, edged pale yellow, new; MRS. BOWMAN, purple-magenta extra fine, new; MRS. CASTLE, intense lake, a full circular flower, new; MRS. GOLDRING, rich rosy-pink, large flower; NEGRESS, dark maroon, almost black, distinct foliage; NELLIE WARE, purplish-crimson, good form, new; PARAGON, deep maroon, good old variety; SCARLET DEFIANCE, rich scarlet, fine flower; TERRA-COTTA, distinct colour, like terra-cotta; THALIA, rich amaranth, dwarf; T. S. WARE, orange-scarlet, large circular flower, new; UTILITY, orange, suffused scarlet (see Fig. 610, 2); VICTOR STRANDBERG, rich scarlet, dark centre, new; WHITE PET, small flower, white, suffused pale rose, fine for cutting

FIG. 609. SINGLE DAHLIAS (1) WHITE PET AND (2) LUCY IRELAND—VARIETIES ILLUSTRATING FLOWERS MUCH REFLEXED.

Dahlia—*continued.*

(see Fig. 609, 1); WHITE QUEEN, white, tinged rose, very free; WHITE STAR, white, slightly shaded rose, fine form; WILLIAM CULLINGFORD, rich yellow.

Cactus and Semi-Cactus Varieties, of which *D. Juarezii* is the type. ANNIE HARVEY, scarlet-crimson, small flowers, very effective, new; COCHINEAL, rich crimson, very fine for cutting, new; CONSTANCE, pure white, free-flowering, most useful: FIRE KING (Glare of the Garden), dazzling scarlet, very floriferous; PARROT, intense orange-scarlet, small, good for cut flowers.

Dais—*continued.*

D. cotinifolia (Cotinus-leaved). *fl.* pinkish, in umbellate involucrated heads. June. *l.* obovate, obtuse. *h.* 10ft. Cape of Good Hope, 1776. The bark of this yields the strongest fibre known to the natives of Southern Africa.

DAISY. *See* **Bellis.**

DALBERGIA (named after Nicholas Dalberg, a Swedish botanist, born 1730, died 1820). ORD. *Legumi-*

FIG. 610. SINGLE DAHLIAS (1) BEACON AND (2) UTILITY—VARIETIES ILLUSTRATING FLOWERS SLIGHTLY REFLEXED.

DAIS (from *dais*, a torch; in allusion to the form of the inflorescence). ORD. *Thymelaceæ.* A genus containing four species of trees and shrubs, three natives of Madagascar, and one from the Cape of Good Hope. The only one in cultivation is *D. cotinifolia*, an interesting greenhouse deciduous shrub. It thrives in a mixture of peat and loam. Increased by cuttings, made of half-ripened shoots, or of the roots, in April, placed in sand, under a bell glass, in heat.

nosæ. A genus containing above sixty species of stove evergreen trees or climbing shrubs, natives of tropical regions in Asia, Africa, and America (two are Australian). Flowers violaceous-purple, or white, in dichotomous cymes or in irregular sub-cymose panicles, axillary or terminal. Leaves alternate, impari-pinnate (rarely unifoliolate). They grow freely in a mixture of fibry peat and turfy loam, to which may be added a small portion of sand. Cuttings of firm young shoots will root in March, if placed in sand,

Dalbergia—*continued.*

under a glass, and in a little bottom heat. Two of the most important are here described.

D. latifolia (broad-leaved). Black Wood. *fl.* white; panicles terminal. May. *fr.* lanceolate. *l.* pinnate; leaflets roundish, emarginate. *h.* 30ft. East Indies. A large deciduous tree, the wood of which is extremely hard, and of a dark colour. It is extensively employed for furniture, carving and fancy work, as well as for gun carriages, &c. (B. F. S. 24.)

D. Sissoo (Sissoo). *fl.* white; panicles axillary, puberulous, shorter than the leaves. May. *l.*, leaflets five, alternate, petiolate, obovate, abruptly acuminated, glabrous above, but pubescent beneath. *h.* 30ft. Bengal, 1820. The wood of this species is very durable, and is largely used in Bengal in the manufacture of gun carriages, railway sleepers, &c. (B. F. S. 25.)

Dalea—*continued.*

D. mutabilis (changeable). *fl.* at first white, but ultimately changing to violet; spikes cylindrical, at length becoming much elongated, pedunculate. October. *l.* with five to ten pairs of obovate or obcordate leaflets. *h.* 1½ft. Mexico, 1818. Plant erect, branched. Perennial. SYN. *D. bicolor.* (B. M. 2486.)

D. Mutisii (Mutis's). *fl.* deep blue, disposed in dense cylindrical heads, which are about 1½in. long. July. *l.* with eight to ten pairs of elliptic-oblong, obtuse leaflets. *h.* 2½ft. to 3ft. South America, 1828. An elegant greenhouse perennial. SYN. *Psoralea Mutisii.*

DALECHAMPIA (named in honour of James Dalechamp, 1513-1588, a French physician, botanist, and philologist). Including *Rhopalostylis* (of Klotzsch). ORD. *Euphorbiaceæ.* There are above sixty species in this genus, but very few of which are of any horticultural merit. The one described below (perhaps the only one in cultivation) is attractive on account of the brilliant rich carmine-rose colour of the bracts. It thrives well in a stove, and requires perfect drainage, and a mixture of loam, peat, and leaf mould, in equal parts, to which may be added a good portion of silver sand. Propagated by cuttings.

D. Roezliana (Roezl's). *fl.* very fragrant; peduncles slender, thread-like, angular, 2in. to 3in. long, bearing at the top two small ovate bracts, placed at the base of two large, broadly egg-shaped, acuminate, denticulate, rosy-pink floral leaves; within these two are other smaller bracts, placed around and among the male and female flowers, some of them thick and club-shaped, and bearing at the top a fringe of short, yellow, waxy-looking

FIG. 611. SINGLE DAHLIA GEORGE CLARK, OR PARAGON IMPROVED—VARIETY ILLUSTRATING FLOWERS SLIGHTLY REFLEXED.

DALEA (named after Dr. Samuel Dale, an English botanist of the last century, and author of a book on Materia Medica). ORD. *Leguminosæ.* A genus of greenhouse herbs, sometimes suffruticose at the base, often beset with glandular dots. Leaves impari-pinnate, having the terminal leaflet sessile. Flowers purplish-blue, whitish, or rarely yellow, disposed in pedunculate spikes, which are opposite the leaves. More than a hundred species are known. The headquarters of the genus is Mexico, a few only being found in Chili and the Andes. For culture, *see* **Psoralea.**

D. alopecuroides (Alopecurus-like). *fl.* whitish, in dense cylindrical silky-villous spikes. Summer. *l.* of many linear-oblong leaflets. *h.* 1ft. to 2ft. United States. Annual.

D. bicolor (two-coloured). A synonym of *D. mutabilis.*

Dalechampia—*continued.*

threads, which give a singular appearance to its blossoms. *l.* 5in. to 9in. long, 1in. to 3in. wide at the broadest portion, very shortly stalked, sub-cordate, tapering towards the base, acuminate at the apex. Vera Cruz, 1867. Habit erect, branched, leafy. This species differs from the majority of its congeners in being erect, not climbing, and in its undivided leaves. (B. M. 5640.) There is a variety (*alba*) with white bracts.

DALIBARDA (named after Denis Dalibard, a French botanist). ORD. *Rosaceæ*. Low perennials, with creeping and densely-tufted stems or rootstocks. The species described below is a very pretty slow-growing little alpine or rock-plant, thriving in deep, peaty soil, in a rather sheltered position. Propagated by divisions.

D. cordata (cordate). A synonym of *D. repens.*

D. fragarioides (Strawberry-like). A synonym of *Waldsteinia fragarioides.*

D. repens (creeping). *fl.* white, on scape-like peduncles. May and June. *l.* cordate, obtuse, crenated, pubescent. Stems creeping. North America, 1768. SYNS. *D. cordata* and *D. violæoides.*

D. violæoides (Viola-like). A synonym of *D. repens.*

DALMATIAN CAP. *See* **Tulipa.**

DALRYMPLEA. A synonym of **Turpinia** (which *see*).

DAMASK ROSE. *See* **Rosa damascena.**

DAMASK VIOLET. *See* **Hesperis matronalis.**

DAME'S ROCKET. *See* **Hesperis matronalis.**

DAME'S VIOLET. *See* **Hesperis matronalis.**

DAMMARA (its native name in Amboyna). Dammar Pine. ORD. *Coniferæ.* A genus of large handsome conifers. Leaves petiolate or almost sessile, sub-opposite and coriaceous. Cones ovate or globular, and axillary; scales persistent, bractless. The proper name of this genus is now *Agathis*, that name having been given by Salisbury long before Lambert published that of *Dammara.* There are about ten species hitherto described; they are natives of the Malayan Archipelago, Fiji, New Caledonia, New Zealand, and Eastern tropical Australia. All the species require a greenhouse temperature. Cuttings of ripe, firm shoots, inserted in sand, in spring, will root, in a gentle bottom heat.

D. australis (Southern). Kauri Pine. *l.* linear-oblong, rarely elliptic, flat on both sides, from 1½in. to 2½in. long, and ½in. to ¾in. broad at the widest part, thick, coriaceous, of a greenish-brown colour. Branches large, spreading, numerous, distant, smooth, divided into numerous smaller ones. *h.* 120ft. to 150ft. New Zealand, 1821.

D. obtusa (blunt-leaved). *l.* variable in shape, mostly oblong, rounded at the ends, 3½in. to 4in. long, 1¼in. broad, thick, leathery, dark glossy green. *h.* 150ft. New Hebrides, 1851. The timber of this tree is extensively employed in shipbuilding.

D. orientalis (Eastern). Amboyna Pine. *l.* opposite, ovate-oblong, entire, glabrous, of a thick, coriaceous texture, from 2in. to 4in. long, and nearly 1½in. broad at the widest part, straight, rarely falcate, smooth, dull green on both surfaces. Branches vertical, slightly reflexed, ascending at the extremities; branchlets spreading. *h.* 100ft. Moluccas, 1804. A large tree, yielding the transparent resin called Dammar. (B. M. 5359.) There is a variety named *alba*, differing from the species in having much longer and more lanceolate leaves, with the edges more regularly rolled up on the under side, slightly undulated, whitish; the bark, also, is of a much whiter colour.

DAMMAR PINE. *See* **Dammara.**

DAMNACANTHUS (from *damnao*, to conquer, and *acanthos*, a spine; in reference to the strong opposite spines). ORD. *Rubiaceæ.* A genus containing two or three species of greenhouse shrubs, with branching habit. They thrive in rich sandy loam and peat. Propagated by cuttings, inserted in sand, under a bell glass, in bottom heat.

D. major (greater). *fl.* white, sweet-scented, axillary and solitary, or twin; calyx five-cleft; corolla funnel-shaped. *fr.*, drupe red, one to four-seeded. *l.* small, opposite, coriaceous, sub-sessile, acuminate: stipules interpetiolar, tricuspidate. Spines acicular. Japan, 1868.

D. m. submitis (nearly unarmed). *fl.* white. Spines very small. Japan, 1868.

DAMPIERA (named in honour of Captain William Dampier, R.N., the celebrated circumnavigator, who paid great attention to natural history in all his voyages).

Dampiera—*continued.*

ORD. *Goodenoviæ.* Greenhouse suffruticose herbs or shrubs. Flowers axillary or terminal, sub-spicate or solitary; corolla bilabiate. They grow freely in a mixture of turfy loam, turfy peat, and sand. Cuttings strike readily, planted in the same kind of soil, with a hand glass placed over them. There are upwards of thirty species, all from Australia, very few of which are in cultivation in this country.

D. Brownii (Brown's). *fl.* blue; corollas densely clothed with black plumose hairs; peduncles solitary or clustered in the upper axils. July. *l.* petiolate, oval, nearly entire, flat, scabrous above. *h.* 1ft. to 2ft. 1824. Plant suffruticose, erect, clothed with scurfy tomentum. SYN. *D. ovalifolia.*

D. ovalifolia (oval-leaved). A synonym of *D. Brownii.*

DAMPING. This is practised in all plant houses in summer, and in tropical houses at all times. It is absolutely necessary in these instances, and in most others where much fire heat is employed, to preserve sufficient moisture in the atmosphere for the well-being of the plants. The floor and walls of the majority of glass structures, especially forcing houses, may be frequently damped in spring and summer. Plants of tender growth bear much more heat with less ventilation when this is well attended to; undue evaporation from the leaves being also prevented. As healthy and free growth is materially affected by Damping, it becomes a matter of great importance towards good cultivation. It is not advisable to throw water over hot pipes; and, although its application frequently beneath or around plants may prove beneficial in dry weather in summer, it may be destructive in many cases to wet the foliage each time, especially when the sun is shining.

DAMPING OFF. This term is applied to the premature decay of the leaves, flowers, or stems of plants. Its effects are most marked on young and tender seedlings, when crowded together, or placed under unsuitable atmospheric conditions. Sometimes the cause may be traced to an excess of moisture that may be suspended in the air or applied to the roots. Damping off amongst cuttings is often caused by allowing them to become dry, and then suddenly applying too much water. The water is generally blamed when the actual cause is drought, and the sudden change subsequently caused by the water. A temperature in a glass house or propagating frame lower than that outside, in either case will cause Damping by the condensation of water on all parts of the plants, as they become colder, like the house. Raise the temperature and the moisture becomes suspended. Immediately Damping is detected amongst tender seedlings, they should be separated and placed out singly in fresh soil. This will invariably check it, but the operation is best performed before Damping begins. Other causes, some unknown, affect different plants, and bring about their destruction in this way; but the primary ones are those here indicated.

DAMSON. *See* remarks under **Plum.**

DANAA. A synonym of **Physospermum** (which *see*).

DANÆA (named after Pierre Martin Dana, a writer on the plants of Piedmont). ORD. *Filices.* A remarkable and distinct genus of stove ferns, not very extensively cultivated. Rhizomes woody. Fronds pinnate, rarely simple, fleshy, coriaceous; pinnæ usually articulated. Sori linear, occupying the whole length of the veins, and crowded so as to cover the whole under surface of the divisions of the fertile fronds. For general culture, *see* **Ferns.**

D. alata (winged). *sti.* of barren fronds 2in. to 6in. long. *barren fronds* 1ft. to 1½ft. long, 6in. to 8in. broad, with eight to ten pinnæ on each side; central ones short-stalked, 3in. to 5in. long, ¾in. broad, the apex acuminate, serrated, the base rounded. *fertile fronds* on a longer stipe, the pinnæ stalked more distinctly, 1in. to 3in. long, acute or obtuse. West Indies.

Among the twelve species described by Baker, the following are given as possible inhabitants of our stoves: *elliptica*, *Moritziana*, and *nodosa.*

DANCING GIRLS. *See* **Mantisia Saltatoria.**

DANDELION (*Taraxacum officinale*). The culture of this herb as a salad-plant is the same as described for **Chicory** (which *see*). The flowers must be picked off frequently in summer, to prevent the ripening, and distribution by the wind, of seed. Dandelion roots are some-

FIG. 612. DANDELION (TARAXACUM OFFICINALE).

times dried, roasted, and ground, and employed to adulterate coffee, or as a substitute for it. The leaves, when blanched, are used in this country, and more so on the Continent, as a salad. See Fig. 612.

DANES' BLOOD. *See* **Sambucus Ebulus.**

DANEWEED. *See* **Sambucus Ebulus.**

DANEWORT. *See* **Sambucus Ebulus.**

DAPHNE (from *daphne*, the Greek name of the Bay-tree, *Laurus nobilis*, used by Theophrastus). ORD. *Thymelaceæ*. Very ornamental evergreen or deciduous shrubs (rarely tall). Flowers odorous, honeyed; perianth tubular, with four spreading lobes and a naked throat; stamens eight, sub-sessile in two series. Fruit coriaceous or fleshy. Leaves usually alternate. There are about forty species, the geographical distribution of the genus being Europe, North Africa, and Temperate Asia. A popular genus of plants, extensively cultivated both in greenhouses and in the open; their fragrant flowers and dwarf-growing habit rendering them excellent subjects for pot culture. The less hardy sorts are good conservatory plants, succeeding admirably when trained on walls, inside, in a partially shaded position. The red and white forms of *D. indica* are grown most largely indoors.

Cultivation. The species cultivated for conservatory decoration are often grafted on stocks of one of the hardier kinds, as, being naturally of slow growth, good plants may be obtained much quicker this way than by cuttings. For propagating by the latter method, matured shoots, or side growths, should be selected in autumn, inserted thinly in well-drained pots of peaty soil, and covered with a bell glass. If kept in a cool house in winter, they will callus, and may, early in spring, be introduced to gentle heat, to encourage growth and the emission of roots. The young plants may then be potted singly, and grown on in a close, but not high, temperature, and afterwards hardened and kept quite cool during the following autumn and winter, in order to thoroughly ripen the wood, a material point towards success in flowering *D. indica*. A temperature of 55deg. will be sufficient to excite growth, and this must not be exceeded until the plants are required to blossom. Grafted specimens may be treated in a somewhat similar way, repotting annually after flowering is over, using loam and peat in equal proportions as a compost. *D. indica* seldom grows fast, consequently pots of 5in. or 6in. diameter will be sufficiently large for good-sized plants. Drainage must always be insured, and water applied very carefully, especially in winter.

Daphne—*continued.*

The hardier species may be used outside, in sheltered positions, on rockwork, or in shrubbery borders, with good effect. *D. Laureola* and *D. pontica* are fine evergreen species, thriving well when planted beneath the shade of trees. The cultivation does not materially differ in the younger stages from the greenhouse kinds; but as these make large specimens in a much shorter time, a richer, though well-drained, soil should be given when planting out.

D. alpina (alpine). *fl.* white, very fragrant, sessile, aggregate. May to July. *l.* lanceolate, a little obtuse, tomentose beneath, deciduous. *h.* 2ft. European Alps, 1759. A low, hardy, branchy evergreen shrub. (L. B. C. 66.)

D. altaica (Altaic). *fl.* white, scentless, sessile, in terminal umbels of about five flowers. April. *l.* obovate-lanceolate, glabrous, of a somewhat glaucous and yellowish-green, especially when young. *h.* 1ft. to 3ft. Siberia, 1796. Hardy. (B. M. 1875.)

D. Blagayana (Blagay's).* *fl.* white, tubular, fragrant, disposed in dense terminal heads. April. *l.* alternate, lanceolate, glabrous. *h.* 1ft. Mountains of Eastern Europe, 1872. Hardy evergreen. (G. C. n. s., xvii. 505.)

FIG. 613. DAPHNE CNEORUM, showing Habit and Detached Cluster of Flowers.

D. Cneorum.* Garland Flower. *fl.* bright pink, sweet-scented, terminal, aggregate, sessile. April, and again in September. *l.* lanceolate, glabrous, mucronate. *h.* 1ft. Europe, 1752. A hardy evergreen trailing shrub. See Fig. 613. There are two or three forms of this species.

D. collina (hill). *fl.* pinkish, in terminal groups; calyx externally silkily villous. January to June. *l.* obovate, glabrous and glossy above, and hirsutely villous beneath. *h.* 2ft. to 3ft. South of Italy, 1752. Erect hardy evergreen. (B. M. 428.)

D. c. neapolitana (Neapolitan). A very pretty plant, with fragrant flowers, which are produced during the winter. It differs from the type chiefly in the want of pubescence on the under surface of the leaves. (L. B. C. 719.)

D. Fortunei (Fortune's). *fl.* lilac, lateral, appearing before the leaves. February. *l.* oblong, or ovate-oblong, silky. *h.* 3ft. China, 1844. A hardy deciduous species. (F. d. S. 208.)

D. Genkwa (Genkwa). *fl.* lilac, fragrant, rather large, fascicled, appearing before the leaves. April. *l.* opposite, lanceolate. *h.* 2ft. to 3ft. Japan, 1866. Hardy evergreen. (R. G. 499.)

D. Gnidium (Gnidium). *fl.* pink, fragrant, in terminal panicled racemes. June to August. *l.* linear-lanceolate, with a cuspidate tip. *h.* 2ft. South-west Europe, 1797. Hardy evergreen. (S. F. G. 366.)

D. indica (Indian).* *fl.* red or white, terminal, sessile. June. *l.* acute, entire. *h.* 4ft. China, 1800. Greenhouse evergreen.

D. japonica (Japanese). *fl.* pinkish-purple, terminal, corymbose. February. *l.* oblong-lanceolate, wavy, margined with yellow. *h.* 2ft. Japan, 1840. Greenhouse evergreen. (P. M. B. 8, 175.)

D. Laureola (Laurel).* Spurge Laurel. *fl.* yellowish-green, in axillary, simple, drooping clusters, that are shorter than the leaves. January to March. *l.* obovate-lanceolate, thick, glossy, shining. *h.* 3ft. to 4ft. Europe (Britain). A low, bushy, ever-

Daphne—*continued.*

green shrub. The berry of this species is very poisonous. See Fig. 614. (Sy. En. B. 1247.)

FIG. 614. DAPHNE LAUREOLA, showing position of Flowers and Leaves.

D. Mezereum (Mezereum).* Common Mezereon. *fl.* red, distributed over the branches mostly in threes, and in pairs and fours, expanding before the leaves appear. February, March, or April. *l.* lanceolate, membranous, 2in. to 3in. long, obtuse or acute, shortly petiolate. *h.* 3ft. to 4ft. Europe (England), but very rare, perhaps not indigenous. A slender, straggling, deciduous shrub. The bark of this species is very acrid, and is used medicinally, for which purpose it is largely imported from Germany. There are white, red, and autumnal-flowering varieties.

D. odora (sweet-scented).* *fl.* purple, fragrant; heads terminal, sessile, many-flowered. March. *l.* scattered, oblong-lanceolate, smooth. *h.* 3ft. China, 1771. Greenhouse evergreen. (B. M. 1587.)

D. o. Mazeli (Mazel's).* *fl.* white, pink, sweet-scented, borne on short lateral branchlets all along the branches, and thus differing from all the other varieties of *D. odora*. It produces its flowers from November until spring, and succeeds best in a partially shaded position. (Gn., Nov. 1878.)

D. oleoides (Olive-like). *fl.* white, terminal, sessile, a few together, and surrounded by leaves that in some measure involucrate them. April. *l.* obovate-lanceolate, terminated with a minute mucro, glabrous on both sides, glossy. *h.* 2ft. South-east Europe, 1818. A hardy evergreen shrub. (B. M. 1917.)

D. pontica (Pontic).* *fl.* greenish-yellow, fragrant, bractless, glabrous, in many-flowered upright clusters, each of the long partial stalks of which bears two flowers. April and May. *l.* obovate-lanceolate, glabrous. *h.* 4ft. to 5ft. Eastern Europe, &c., 1759. A hardy, spreading, branchy, evergreen shrub. (B. M. 1282.) There is a form with variegated leaves, but it is rare.

D. striata (streaked). *fl.* rosy-purple, Carnation-scented, terminal, aggregate. June and July. *l.* sub-spathulate-linear, sessile. *h.* 2ft. Europe, 1819. A hardy evergreen, forming dense, twiggy, spreading masses, 1ft. to 3ft. across.

D. Tarton-raira. *See* **Thymelæa Tartonraira.**

DAREA. A section of *Asplenium*.

DARLINGTONIA (named in honour of Dr. Darlington, an American botanist). ORD. *Sarraceniaceæ*. A very curious and remarkable hardy herbaceous monotypic genus, allied to *Sarracenia*, but without the curious umbrella-shaped summit to the style, which is so conspicuous in the latter. It is an admirable plant for growing in the greenhouse, in conjunction with Cephalotus, Drosera, Sarracenia, &c., and requires the same cultural treatment. Out of doors, it thrives best in a damp and shady position, in the rockery or fernery, where it must be kept well supplied with water. The best soil is one composed of peat and chopped sphagnum, to which plenty of sharp sand and small pieces of limestone are added. Darlingtonias should have the protection of a handlight, which is preferable to a bell glass, as ventilation may be more easily given. It is usually considered somewhat difficult to get the seeds to germinate and grow. The following mode of treatment has, however, been found successful: The pots should be filled, within 1in. of the top, with fibrous peat, charcoal, fresh-chopped

Darlingtonia—*continued.*

sphagnum, and sand, in equal parts, then coated with fresh tips of sphagnum. On this the seeds should be sprinkled, and well watered, the pots being stood in pans of water, and covered with a bell glass, in order to keep the atmosphere above the seeds in a moist condition. The pots should then be placed in a shady position in a cool greenhouse, and in about five or six weeks the seeds will commence germinating. When strong enough, the seedlings should be pricked off into pans filled with the same compost as above mentioned, and transferred to a cold, shady frame, where they must be kept constantly moist. Perfect drainage and a cool, shady position, are at all times absolutely essential.

FIG. 615. DARLINGTONIA CALIFORNICA.

D. californica (Californian).* *fl.* about 2in. in diameter; sepals whitish or pale green; petals yellow-green, marked with dark red-brown veins, oblong. April. *l.*, or pitchers, slender at the base, gradually swelling upwards; apex bent over, or hood-like, with a large triangular process depending from the aperture; ground colour bright green, upper portion and throat beautifully mottled with white, and reticulated with reddish-pink veins. *h.* 1ft. to 1½ft. California, 1861. See Fig. 615. (B. M. 5920.)

DARNEL. *See* **Lolium temulentum.**

DART MOTH. *See* **Turnip Moth.**

DARWINIA (named in honour of Dr. Darwin, author of a once famous poem entitled "The Botanic Garden"). SYNS. *Genetyllis*, *Hedaroma*, and *Polyzone*. ORD. *Myrtaceæ*. A genus of greenhouse, Heath-like, evergreen shrubs; there are upwards of a score species known, all natives of Australia. Flowers red or white, in terminal fascicles, inclosed in large, coloured, ovate or oblong involucres, and interspersed with chaffy bracts. Leaves scattered, full of pellucid dots. For culture, &c., *see* **Calythrix.**

D. citriodora (Lemon-scented). *fl.* usually four, in small terminal heads; involucre scarcely exceeding the flowers, consisting usually of four outer leaf-like bracts, and four inner ovate ones, more or less coloured. *l.* nearly opposite, from narrow-oblong to almost ovate-lanceolate, obtuse. *h.* 1ft. to 2ft. SYN. *Hedaroma latifolium*.

D. diosmoides (Diosma-like). *fl.* white, numerous, in compact terminal globular heads; calyx about one and a half lines long, the adnate part obscurely five-ribbed, and covered nearly from the base by glandular papillæ more or less distinctly arranged in six to eight prominent parallel rings; petals white. April. *l.* scattered, crowded, linear, semi-terete or triquetrous, thick or slender, obtuse. *h.* 3ft. 1827. An erect bushy shrub. SYN. *Genetyllis diosmoides*.

D. fascicularis (fascicled). *fl.* red, about six or twelve together, in terminal heads, within the last leaves; calyx slender, the adnate part prominently five-ribbed, otherwise smooth; lobes very small and scale-like; petals broad. June. *l.* scattered, often crowded, linear, slender, semi terete, or obtusely triquetrous, shortly petiolate; floral ones slightly longer. *h.* 3ft. to 6ft. 1820. An erect much-branched shrub.

D. fimbriata (fimbriated).* *fl.* rather numerous; involucres ovoid, about ¾in. long, or rather more, the inner bracts petaloid, pink, broadly oblong or almost cuneate and very obtuse; the outer ones short, broad, and squarrose, but coloured, and all

Darwinia—*continued.*

ciliate; petals triangular. June. *l.* scattered, often crowded, oblong-elliptical, very obtuse; margins recurved, strongly ciliate-denticulate. *h.* 1ft. to 2ft. 1864. A bushy shrub. SYN. *Genetyllis fimbriata.* (B. M. 5468.)

D. Hookeriana (Hooker's).* This species much resembles *D. macrostegia*, but is usually smaller, more slender, and less twiggy. SYN. *Genetyllis Hookeriana.* (B. M. 4860, under the name of *Genetyllis macrostegia.*)

Darwinia—*continued.*

them, but not coloured; calyx rather slender, strongly five-ribbed, otherwise smooth; petals rather narrow, concave, with a deep-coloured spot at the top. May. *l.* mostly opposite, linear or lanceolate, obtuse; margins revolute. *h.* 1ft. SYN. *Hedaroma thymoides.*

DASYLIRION (from *dasys*, thick, and *lirion*, a lily). ORD. *Liliaceæ.* Very ornamental greenhouse evergreens,

FIG. 616. FLOWERING BRANCH OF DARWINIA MACROSTEGIA.

D. macrostegia (large-involucred).* *fl.* rather numerous; involucre campanulate, nearly 1½in. long; the petal-like inner bracts broadly obovate, pale yellow, streaked with red, quite entire; petals white. June. *l.* scattered, elliptical-oblong or slightly cuneate, very obtuse, ½in. to ¾in. long; margins recurved, entire. *h.* from 2ft. to 3ft. 1854. SYNS. *Genetyllis tulipifera* (B. M. 4858), *G. macrostegia*, and *Hedaroma tulipiferum.* See Fig. 616.

D. pinifolia (Pine-leaved). This species closely resembles *D. fascicularis* in habit, foliage, and inflorescence, but with a different calyx and staminodia. SYN. *Hedaroma pinifolium.*

D. purpurea (purple). *fl.* numerous, in dense, hemispherical heads; involucral bracts numerous, more or less coloured, imbricate, but somewhat spreading, rather longer than the flowers; calyx about two lines long, the adnate part five-ribbed at the base, the upper half encircled by five or six rings of glandular papillæ. *l.* scattered, crowded, and almost imbricate, linear, obtuse. Erect, much-branched shrub. SYNS. *Genetyllis purpurea*, *Polyzone purpurea.*

D. taxifolia (Yew-leaved). *fl.* white, at the ends of the branchlets; calyx prominently five-ribbed, the adnate part slightly rugose between the ribs; lobes small, scale-like; petals ovate. June. *l.* mostly opposite, linear-falcate, triquetrous or laterally compressed, acute, ¼in. to ½in. long, almost petiolate. *h.* 1ft. to 3ft. 1824. A straggling or decumbent shrub.

D. thymoides (Thyme-like). *fl.* sessile, four to eight together, in terminal heads, the outer bracts sometimes slightly exceeding

allied to *Nolina.* Flowers diœcious, in dense panicles; flower-stems sometimes 10ft. or 12ft. in height. Leaves crowded, linear, gracefully drooping. They thrive in a compost of two parts loam, one peat, and one sand. Perfect drainage and a plentiful supply of water during the summer months, are important cultural items. Increased by seed. Dasylirions form admirable plants for sub-tropical gardening, or for conservatory and indoor decoration.

D. acrotrichum (hair-tipped).* *fl.* white; panicle dense, cylindrical, 4ft. to 5ft. long. *l.* densely rosulate, recurved, linear, 2ft. to 3ft. long, less than 1in. broad, with a long fibrous tuft at apex; marginal spines sharp, yellowish. Trunk stout, simple. *h.* 6ft. to 10ft. Mexico, 1851. SYN. *D. gracile.* (B. M. 5030.)

D. a. brevifolium (short-leaved). *l.* shorter than those of the type, rarely more than 2ft. in length, not becoming pendulous.

D. glaucophyllum (milky-green-leaved).* *fl.* white; panicles narrow, 3ft. to 4ft. long; peduncles elongated; flower-stem 10ft. to 12ft. high. *l.* dense, 2ft. to 3ft. long, about ¼in. broad, glaucous; margin armed with small teeth. *h.* 12ft. Mexico, 1846. SYN. *D. glaucum.* (B. M. 5041.) The variety *latifolium* has broader leaves, and is more robust in growth than the type.

D. glaucum (grey). A synonym of *D. glaucophyllum.*

* 3 ft or more tufted.

Dasylirion—*continued.*

D. gracile (graceful). A synonym of *D. acrotrichum.*

D. graminifolium (grass-leaved). *fl.* white; inflorescence 8ft. to 9ft. long; panicle narrow. *l.* in a dense rosette, linear, 3ft. to 4ft. long, six to seven lines broad, green; marginal prickles half to one line long.* Trunk short. *h.* 8ft. Mexico, 1835.

D. Hartwegianum (Hartweg's). A synonym of *D. Hookeri.*

D. Hookeri (Hooker's). *fl.* purplish; inflorescence about 1½ft. long; peduncles short; panicle dense. *l.* narrow, linear, 1½ft. to 2ft. long, two to three lines broad, pale glaucous green; margin serrate. Caudex a gigantic tuber, with the leaves springing in fascicles from tubercles on its surface. *h.* 3ft. Mexico, 1846. SYN. *D. Hartwegianum.* (B. M. 5099.)

D. laxiflorum (loose-flowered). A synonym of *D. serratifolium.*

D. serratifolium (saw-leaved). *fl.* white; panicle dense, 1ft. long. *l.* 2ft. long, nearly 1in. broad; marginal teeth half to one-and-a-half lines long.* Stem stout. Mexico. SYN. *D. laxiflorum.*

DATE PALM. *See* **Phœnix dactylifera.**

DATE PLUM. *See* **Diospyros Kaki.**

DATISCA (derivation unknown). ORD. *Datisceæ.* A very graceful herbaceous perennial, well suited for a collection of hardy, fine-leaved plants, and also as an isolated specimen. It thrives in a deep, good soil, and may be propagated by dividing plants that have become well established; also by seeds.

FIG. 617. FLOWERS AND LEAF OF DATISCA CANNABINA.

D. cannabina (Hemp-like).* *fl.* yellow, disposed in long, loose, axillary racemes. September. *l.* pinnate, alternate; leaflets in three pairs and an odd one, about 2in. long, and ½in. broad, deeply serrate. *h.* 3ft. to 6ft. Crete and Western Asia, 1739. The male and female forms should be grown, as, though both are graceful, the fertilised female plant is the most so, and continues much longer in a green state. See Fig. 617. (S. F. G. 960.)

The only other species of the genus is *D. glomerata*, a native of California and Mexico; it is probably not in cultivation in this country.

DATISCEÆ. A small order of dicotyledonous plants, closely allied to the Begonias. Herbs or trees, glabrous, pubescent, or almost scaly. Flowers dioecious, regular, rarely hermaphrodite or polygamous; corolla small or altogether wanting; calyx tube adhering to the ovary. Fruit a one-seeded capsule, opening at the top. Leaves alternate, simple or pinnate. There are only three known genera: *Datisca*, *Octomeles*, and *Tetrameles.*

DATURA (derivation obscure; said to come from the Arabic name, *datora*). ORD. *Solanaceæ.* Including *Brugmansia*, *Ceratocaulis*, *Dutra*, and *Stramonium.* Ornamental and pretty annuals, shrubs or trees. Flowers extra-axillary, pedunculate, or from the forks of the branches; corolla funnel-shaped. The annual species are generally known as *Daturas*, and the shrubby ones as *Brugmansias.* From an horticultural point of view, the latter section is by far the most important.

PROPAGATION. This may be easily effected by cuttings of about 6in. in length, placed in sandy soil, and plunged in a bottom heat of 60deg. Young shoots, heeled off the old

Datura—*continued.*

wood, when they have grown about 6in. long, in spring, root freely. The annual species may be readily raised from seed.

CULTIVATION. *Shrubby Species.* These thrive well against pillars, or planted in beds or borders in conservatories, and allowed to grow into large bushes or dwarf trees. The plants bear severe pruning remarkably well, and may be cut to keep them in any form or size desired. The best time to prune is at the close of the flowering season, or later in the autumn. This section of the genus is naturally an evergreen one, but does well treated as deciduous. Daturas enjoy a moderate amount of warmth when in full growth, but require to be kept dry and quite cool in winter. The best way of growing them in moderate-sized houses is in 12in. pots, as standards. These may have stems ranging in height from 4ft. to 7ft. The head should be formed of three or more branches, which will quickly be produced on stopping the main stem. After it is once obtained, the annual growths may be cut back to where the leading branches originate. Old plants flower far more freely than younger ones. Standard plants of *D. sanguinea* and *D. suaveolens* are well suited as permanent features for centres of beds or groups. *D. Knightii* does well in sheltered positions outside, in summer, and forms a rich and pleasing addition to the usual sub-tropical large-leaved plants. During the flowering period, manure water is most useful in increasing the vigour of the plants and the number and size of the flowers. Daturas are rather subject to White Scale on the leaves and stems.

Annual Species. These are of very easy cultivation. Seeds may be readily raised in a hotbed; and the seedlings, when large enough to handle, should be placed singly in small pots, and finally transferred to their flowering quarters in the open border. They delight in a light sandy soil, and require plenty of space for full development.

FIG. 618. FLOWERING BRANCH OF DATURA CERATOCAULA.

Datura—*continued.*

D. arborea (tree-like).* *fl.*, corolla white, 7in. to 8in. long. August. *l.* elliptic-oblong, quite entire, and are, as well as the petioles and branches, clothed with powdery pubescence. *h.* 7ft. to 10ft. Peru, &c., 1813. Greenhouse shrub. SYN. *Brugmansia candida.*

D. ceratocaula (horn-stalked). *fl.*, corolla with a green tube, white limb, tinged with purple, sweet-scented. July. *l.* ovate-lanceolate, toothed, hoary beneath. Stem terete, purplish, dichotomous, horn-formed, pilose at the base. *h.* 2ft. to 3ft. Cuba, 1805. Annual. SYN. *Ceratocaulos daturoides.* See Fig. 618. (B. M. 3352.)

D. chlorantha flore-pleno (double yellow-flowered).* *fl.* yellow, double, sweet-scented, solitary, axillary, pendent, shortly pedunculate; corolla funnel-shaped, dilated at the mouth. August to October. *l.* agreeing in shape with *D. cornigera*, but quite glabrous. Branches terete. Native country unknown. 1845. A handsome, free-flowering species. (B. M. 5218.)

D. cornigera (horn-bearing). *fl.*, corolla white, or cream-coloured, large, funnel-shaped, striated, the mouth spreading, five-lobed, the lobes terminated by a long subulate, spreading or recurved point; peduncles axillary, single-flowered, curved downward, so that the flower is drooping. Summer. *l.* chiefly confined to the extremities of the branches, ovate, petiolate, acuminate, entire, or sinuate or angled. Stem shrubby, about 3ft. high; the young branches and almost every part of the plant clothed with soft down. *h.* 10ft. Organ Mountains, 1844. A very singular plant. (B. M. 4252.)

D. fastuosa (prickly).* *fl.*, corolla violaceous outside, and white inside, oblique. July. *l.* ovate, acuminated, repandly-toothed, unequal at the base, and are, as well as the stem, downy. *h.* 2ft. to 3ft. East Indies, &c., 1629. Annual.

D. lævis (smooth). A synonym of *D. muricata.*

D. Metel (Metel).* *fl.* fragrant; corolla white, large. June. *l.* cordate, quite entire, or a little toothed, and are, as well as the stem, downy. *h.* 2ft. Tropics, 1596. Annual. (B. M. 1440.)

FIG. 619. FLOWERING BRANCH OF DATURA METELOIDES.

D. meteloides (Metel-like)* is a greenhouse evergreen, very similar to the foregoing, with large longer-tubed flowers, of a bluish-violet, or else white. California, 1856. SYN. *D. Wrightii.* See Fig. 619. (F. d. S. 1266.)

D. muricata (muricated). *fl.*, corolla white, long. July. *fr.* muricated with strong short prickles, slightly erect. *l.* ovate, repand, when young toothed, glabrous, unequal at the base. *h.* 2ft. to 3ft. Tropical Asia, 1820. Annual. SYN. *D. lævis.*

D. quercifolia (Oak-leaved). *fl.*, corolla violaceous. July. *l.* sinuately pinnatifid, hairy on the veins beneath. *h.* 1ft. to 2ft. Mexico, 1824. Annual.

D. sanguinea (bloody).* *fl.* solitary, pendulous, issuing from the forks of the branches; corolla funnel-shaped, 7in. long, pubescent; tube orange-yellow, green towards the base, thick and fleshy; calyx large, ventricose, five-angled, five-ribbed, with prominent veins, copiously pubescent. Summer. *l.* alternate, often geminate, ovate-oblong, obtuse, waved and sinuated, with short blunt lobes, copiously clothed on both sides with soft white hairs; petioles stout, nearly cylindrical, copiously hairy, slightly flattened above. Stem arboreous, from 3ft. to 12ft. high, round, divided at the top *h.* 4ft. to 8ft. in cultivation. Peru. An elegant plant. (S. B. F. G. ii. 272, under name of *Brugmansia sanguinea.*)

FIG. 620. MATURE FRUIT OF DATURA STRAMONIUM.

FIG. 621. BRANCH OF DATURA STRAMONIUM, with Flowers and Fruit.

D. Stramonium (Stramonium). Thorn Apple. *fl.* white. July. *l.* ovate, angularly-toothed, cuneiform at the base, smoothish, green. *h.* 2ft. England. Annual. See Figs. 620 and 621. (Sy. En. B. 935.)

D. suaveolens (sweet-scented).* *fl.* white, sweet-scented, large. August. *l.* elliptic-oblong, quite entire, glabrous above, and scarcely downy beneath. *h.* 10ft. to 15ft. Mexico, 1733. A very handsome greenhouse tree or shrub, much more extensively grown than any other member of the genus. SYN. *Brugmansia suaveolens.*

D. Tatula (Tatula). *fl.* violaceous. July. *l.* cordate-ovate, angularly toothed, unequal at the base, glabrous. *h.* 2ft. to 3ft. America, 1629. Annual. (S. B. F. G. 83.)

D. Wrightii (Wright's). A synonym of *D. meteloides.*

There are several good garden forms in cultivation; the best perhaps being *D. Knightii*, a very handsome conservatory plant, with large double white pendulous flowers.

DAUBENTONIA. *See* **Sesbania.**

DAUBENYA (named after Dr. Charles Daubeny, a former Professor of Botany, at Oxford). ORD. *Liliaceæ*. A genus of pretty and curious little greenhouse bulbs, producing their flowers in very shortly-stalked, densely-flowered umbels, larger than a crown piece. There are three species, natives of the Cape of Good Hope; at present, they probably do not exist in British gardens. They thrive in a soil composed of sandy loam and peat. Increased by offsets. Daubenyas should be quite dry while at rest.

D. aurea (golden). *fl.* yellow; perianth tuberose, with a two-lipped limb. June. *l.* oblong, seated close to the earth. *h.* 3in. 1832. (B. R. 1813.)

D. fulva (tawny). *fl.* dull reddish-yellow. June. *h.* 6in. 1836. (B. R. 1839, 53.)

DAUCUS (*Daukos*, of Dioscorides, is said to be from *daio*, to make hot; from its supposed effect in medicine). Carrot. ORD. *Umbelliferæ*. For culture, *see* **Carrot.**

D. Carota. Carrot. *fl.*, umbels white, peduncled; central purplish; bracts of involucre usually pinnatifid; bracteoles lanceolate. Summer. *l.* pinnately decompound; segments small, rather hairy. *h.* 1ft. to 2ft. Europe (Britain), North Africa, North and West Asia, to India. Biennial.

There are about a score other species, but none are worth mention, either as ornamental or useful plants.

DAVALLIA (named after E. Davall, a Swiss botanist). Including *Acrophorus*, *Humata*, *Leucostegia*, *Loxoscaphe*, *Microlepia*, *Odontoloma*, *Prosaptia*, *Saccoloma*, *Scyphularia*, and *Stenoloma*. ORD. *Filices*. A large genus of greenhouse ferns, upwards of a hundred being described in "Synopsis Filicum." Rhizomes creeping, scaly. Involucre terminal on the veins, various in shape, united or free at the sides; the apex always free. Capsules stalked. Sori intra- or sub-marginal, globose or elongated either laterally or vertically. For general culture, *see* **Ferns.**

FIG. 622. DAVALLIA AFFINIS.

D. affinis (related).* *rhiz.* thick, densely scaly. *sti.* 4in. to 9in. long, erect. *fronds* 1ft. to 2ft. long, 6in. to 12in. broad, deltoid-lanceolate, tri- or quadripinnate; lower pinnules with oblong-rhomboidal lobes, the segments of which are deeply inciso-pinnatifid. Ceylon, &c. See Fig. 622. (H. S. F. 1, 52.)

D. alata (winged). A synonym of *D. Emersoni*.

D. alpina (alpine). *rhiz.* creeping, scaly. *sti.* 2in. to 4in. long. *fronds* 2in. to 3in. long, 1in. to 1½in. broad, deltoid in outline; upper segments of barren frond slightly dentate, blunt at the

Davallia—*continued.*

FIG. 623. DAVALLIA ALPINA.

apex of the fertile fronds, distant, deeply, and sharply toothed; the lower ones cut nearly to the rachis with sharply-toothed lobes. *sori* placed in the teeth on both sides. Java, Borneo. See Fig. 623.

D. angustata (narrow). *rhiz.* creeping, scaly. *fronds* sub-sessile, 3in. to 8in. long, ¼in. to ⅜in. broad, linear, slightly crenate at the margin; barren ones entire. *sori* in a row along the edges. Malay Peninsula.

D. bullata (blistered-leaved). *rhiz.* creeping, stout, densely fibrillose. *sti.* strong, erect, 3in. to 4in. long. *fronds* 8in. to 12in. long, 4in. to 8in. broad, deltoid, quadripinnatifid; pinnules of the lower pinnæ lanceolate, 2in. to 3in. long, with deeply inciso-pinnatifid oblong-rhomboidal segments. *sori* deeply half cup-shaped. East Indies, &c. (H. S. F. 1, 50 B.)

D. calvescens (naked). A synonym of *D. marginalis*.

D. canariensis (Canaries).* Hare's-foot Fern. *rhiz.* creeping, densely scaly. *sti.* strong, erect, 4in. to 6in. long. *fronds* 1ft. to 1½ft. long, 9in. to 12in. broad, deltoid, quadripinnatifid; pinnules of the lower pinnæ lanceolate-deltoid, 2in. to 3in. long, more than 1in. broad, with ovate-rhomboidal deeply inciso-pinnatifid segments. *sori* occupying a whole ultimate division. Spain, &c. This fern derives its popular name from the peculiar form of the rootstock, which curves over the side of the pot in which it grows, and, being covered with close brown hair, it very much resembles a hare's foot. (H. S. F. 1, 56 A.)

D. chærophylla (Chervil-leaved). *rhiz.* wide-creeping, scaly. *sti.* 4in. to 6in. long, naked. *fronds* 9in. to 15in. long, 4in. to 8in. broad, lanceolate-deltoid, tri- or quadripinnatifid; lowest pinnules 1in. to 2in. long, 1in. broad, cut into deeply pinnatifid segments; ultimate lobes narrow and acute in the fertile, rather broader in the barren, frond. *sori* copious. North India. SYN. *D. pulchra*. (H. S. F. 1, 51 A.)

D. dissecta (dissected).* *rhiz.* stout, wide scandent, densely scaly. *sti.* 6in. long, naked. *fronds* 1ft. to 1½ft. long, deltoid, quadripinnatifid; pinnæ stalked, lanceolate, the lowest deltoid, 5in. to 6in. long; pinnules close, deltoid, sub-sessile; segments oblong, deeply pinnatifid. *sori* minute, oblong. Java, 1856. (G. C. 1855, 469.)

D. divaricata (divaricate). *rhiz.* creeping, stout, scaly. *sti.* firm, erect, 6in. to 12in. long. *fronds* 2ft. to 3ft. long, tripinnatifid; lower pinnæ often 12in. long by 6in. broad; segments deltoid, or cut down to the rachis in the lower part. *sori* half cup-shaped. Malay Archipelago. SYN. *D. polyantha*. (H. S. F. 1, 59 A.)

D. dubia (doubtful). *fronds* ample, deltoid, quadripinnatifid; pinnæ oblong-lanceolate, 1ft. or more long, 2in. to 4in. broad; pinnules close, lanceolate, stalked, with close oblong sessile segments, the lower pinnatifid, upper entire. *sori* minute, one to each final lobe. Australia. (H. S. F. 1, 24 C.)

D. elegans (elegant).* *rhiz.* stout, creeping, densely fibrous. *sti.* firm, erect, 4in. to 8in. long. *fronds* 1ft. to 2ft. long, 9in. to 15in. broad, deltoid, tripinnatifid; pinnules of the lower pinnæ 2in. to 3in. long, 1in. broad, deltoid-lanceolate, cut down to the rachis on the lower part with oblong-deltoid segments, which are slightly toothed. *sori* several to a segment, marginal. Tropics of Old World.

D. e. elata (tall) is a form with larger and less leathery fronds, the segments of which are narrower, more deeply and sharply cut. (H. S. F. 1, 55 A.)

D. e. flaccida (feeble) is a tender, finely-cut form.

Davallia—*continued.*

D. Emersoni (Emerson's). *fronds* tufted, sessile, 6in. to 12in. long, nearly 1in. broad at the widest part, linear-lanceolate, cut into numerous linear-oblong lobes. *sori* one to six, placed around the edge of the lobes. Madras. SYN. *D alata.*

FIG. 624. DAVALLIA FIJENSIS.

D. fijensis (Fiji).* *rhiz.* creeping, stout, densely fibrillose. *sti.* 6in. to 9in. long, erect, strong. *fronds* 1ft. to 1½ft. long, 6in. to 12in. broad, deltoid, quadripinnatifid; pinnules of the lower pinnæ deltoid-lanceolate; the lobes of the segment cut down nearly to the rachis into linear divisions. *sori* half cylindrical. Fiji, 1879. See Fig. 624.

D. firma (firm). A synonym of *D. hirta.*

D. fumarioides (Fumaria-like). *rhiz.* creeping, stout, fibrillose. *sti.*, including rachis, 4ft. long, scandent, spinoso-flexuose. *fronds* tripinnatifid; lower pinnæ 1ft. to 1½ft. long, 4in. to 6in. broad; segments small, deeply cut; lobes usually only one-veined. *sori* cup-shaped, as broad as the segment. West Indies.

D. gibberosa (swollen-rooted). *sti.* tufted, 6in. to 12in. long, erect, naked. *fronds* 1ft. to 1½ft. long, 6in. to 9in. broad, lanceolate-deltoid, quadripinnatifid; pinnules of lower pinnæ lanceolate-deltoid, 2in. to 3in. long, 1in. broad; segments cut down to the rachis. *sori* terminal in the ultimate divisions. Polynesian Islands, 1825.

FIG. 625. DAVALLIA HETEROPHYLLA.

Davallia—*continued.*

D. Griffithiana (Griffith's). *rhiz.* wide-creeping, densely scaly. *sti.* erect, wiry, elongated. *fronds* deltoid, with an attenuated apex, 9in. to 12in. long, 4in. to 8in. broad; pinnæ acuminate; pinnules oblong-lanceolate, obtuse; lobes short and blunt. *sori* large, cup-shaped, sub-marginal. Assam. (H. S. F. 1, 49 B.)

D. hemiptera (half-winged). A synonym of *D. repens.*

D. heterophylla (variable-leaved). *rhiz.* creeping, scaly. *fronds* shortly stalked, 3in. to 6in. long, 1in. broad, glabrous; barren one ovate-lanceolate, entire, or slightly lobed at the base, fertile one narrower, and deeply sinuato-pinnatifid. Malayan Peninsula. See Fig. 625.

D. hirta (hairy).* *sti.* strong, 1ft. to 2ft. long. *fronds* 3ft. to 6ft. long, 1ft. to 2ft. broad, deltoid, tri- or quadripinnatifid; lower pinnæ 6in. to 12in. long, 3in. to 4in. broad, ovate-lanceolate, pinnules lanceolate, cut down to the rachis into oblong, broadly toothed lobes. *sori* two to twenty to a segment. North India, &c. SYNS. *D. firma* and *D. scaberula.*

D. immersa (immersed). *rhiz.* creeping, stout, fibrillose. *sti.* 4in. to 8in. long, strong, erect. *fronds* 1ft. to 1½ft. long, 6in. to 9in. broad, deltoid, tripinnate; lowest pinnules lanceolate, deltoid, 2in. to 3in. long, 1in. broad, with broad segments. *sori* large, one to six to a segment. Hindostan, &c.

D. khasyiana (Khasyan). A synonym of *D. strigosa.*

D. lonchitidea (Lonchitis-like). A synonym of *D. platyphylla.*

D. marginalis (marginal). *rhiz.* creeping, villous. *sti.* 1ft. to 2ft. long, erect, strong. *fronds* 1½ft. to 2ft. long, 9in. to 15in. broad, pinnate; pinnæ 4in. to 8in. long, about 1in. broad, linear, cut down into bluntish oblong lobes. *sori* two to eight to a lobe, sub-marginal. Ceylon. SYNS. *D. calvescens*, *D. scabra*, and *D. villosa.* (H. S. F. 1, 48 B.)

D. Mariesii (Maries).* A pretty dwarf evergreen species, with slender creeping rhizomes. It is well suited for the cool greenhouse. In general aspect, much like *D. bullata.* Japan, 1879.

D. Mooreana (Moore's). A synonym of *D. pallida.*

D. Novæ-Zealandiæ (New Zealand). *rhiz.* creeping, scaly. *sti.* 4in. to 8in. long, firm, erect. *fronds* 1ft. to 1½ft. long, 4in. to 8in. broad, deltoid, tripinnate; lower pinnules deltoid-lanceolate, cut down to the rachis, except toward the apex, into narrow, deeply pinnatifid segments. *sori* numerous. New Zealand. SYN. *Acrophorus hispidus.*

D. pallida (pale).* *rhiz.* as thick as a finger, wide-creeping, scaly. *sti.* 1ft. to 1½ft. long, naked. *fronds* 2ft. to 3ft. long, sub-deltoid, quadripinnatifid; *pinnæ* deltoid, lowest largest, 6in. to 8in. broad; pinnules and tertiary segments deltoid, stalked; ultimate lobes obovate, cuneate, blunt, one to one-and-a-half lines broad; involucres marginal, funnel-shaped. Borneo, 1869. SYN. *D. Mooreana.* See Fig. 626, next page. (G. C. 1869, 964.)

FIG. 627. DAVALLIA PARVULA.

D. parvula (little). *rhiz.* wide-creeping, scaly. *sti.* 1in. to 2in. long, or *fronds* sub-sessile, ½in. to ¾in. long by ½in. broad, deltoid in outline, bi- or tripinnate, with all the divisions of the frond almost filiform. *sori* placed at the sinuses of the ultimate forks. Borneo, 1868. See Fig. 627.

D. pectinata (combed). *rhiz.* creeping, scaly. *sti.* 2in. to 4in. long, erect, scaly. *fronds* 4in. to 8in. long, 2in. to 3in. broad, ovate-lanceolate, deeply cut into long parallel linear-oblong, entire, or inciso-pinnatifid pinnæ. *sori* obliquely placed in two sub-marginal rows. Tropical Polynesian Islands.

D. pedata (pedate). *rhiz.* creeping, scaly. *sti.* 2in. to 4in. long, rather scaly. *fronds* 2in. to 4in. long, 1½in. to 2in. broad at the base, deltoid in outline, deeply cut; upper segments linear-oblong, acute, inciso-dentate, lower pair broader. *sori* placed in rows on the teeth on both sides of the lobes. Tropical Asia, &c. (H. S. F. 1, 45.)

D. pentaphylla (five-leaved).* *rhiz.* creeping, stout, densely fibrillose. *sti.* erect, strong, 2in. to 4in. long. *fronds* with a terminal segment, and two to three pairs of lateral pinnæ; terminal segments of fertile fronds linear, 4in. to 6in. long, ¼in. broad, those of the barren fronds broader and shorter. *sori* in two rows along the slightly toothed margins. Java, &c.

D. pinnata (pinnate). *rhiz.* creeping, fibrillose. *sti.* strong, erect, 6in. to 12in. long. *fronds* 9in. to 15in. long, 4in. to 8in. broad, with distant linear, slightly toothed pinnæ, 6in. long, ¼in. to ¾in.

Davallia—*continued.*

broad. *sori* one to each tooth, small. Malayan Peninsula. *D. serrata*, *D. gracilis*, and *D. Luzonica* are either identical with this species, or else unimportant forms. (H. S. F. 1, 60.)

D. platyphylla (broad-leaved).* *rhiz.* creeping, stout. *sti.* 2in. to 3ft. long, firm, erect. *fronds* 3ft. to 4ft. long, tripinnatifid; lower *pinnæ* 1ft. to 1½ft. long, 6in. to 9in. broad, lanceolate, with distant linear-lanceolate pinnules, which are deeply cut into broad, bluntish toothed lobes. *sori* two to twelve to a segment. East Indies. SYN. *D. lonchitidea.* (H. S. F. 1, 46 B.)

D. polyantha (many-fruited). A synonym of *D. divaricata.*

D. pulchra (fair). A synonym of *D. chærophylla.*

D. pyxidata (Box-like).* *rhiz.* stout, creeping, densely scaly. *sti.* strong, erect, 4in. to 6in. long. *fronds* 9in. to 18in. long, 6in. to 9in. broad, deltoid, tri- or quadripinnatifid; pinnules of the lower pinnæ lanceolate, 2in. to 3in. long, 1in. broad, with deltoid or oblong segments. *sori* deeply half cup-shaped in the teeth. New South Wales, 1808. (H. S. F. 1, 55 C.)

D. repens (creeping).* *rhiz.* wide-creeping, climbing. *fronds* simply pinnate, 8in. to 18in. long, ½in. to 1½in. broad; pinnæ ¼in. to ½in. long, about half as broad as deep. *sori* marginal, large. Borneo, &c., 1869. SYNS. *D. hemiptera*, *Odontoloma repens.* See Fig. 628 (next page).

D. scaberula (slightly rough). A synonym of *D. hirta.*

D. scabra (rough). A synonym of *D. marginalis.*

D. solida (solid).* *rhiz.* stout, densely scaly. *sti.* strong, erect, 4in. to 6in. long. *fronds* 1ft. to 2ft. long, 1ft. to 1½ft. broad, deltoid, tripinnatifid; segments ovate-rhomboidal, deeply toothed, narrower and sharper in fertile fronds. *sori* nearly or quite marginal. Isle of Luzon, 1844. (H. S. F. 1, 42.) *D. ornata* is a form with broad, slightly cut segments.

D. strigosa (strigose). *rhiz.* stout, creeping, pubescent. *sti.* erect, strong, 6in. to 12in. long, pubescent. *fronds* 1ft. to 3ft. long, 6in. to 12in. broad, lanceolate, bipinnatifid; lower pinnæ 4in. to 8in. long, about 1in. broad, linear-lanceolate, acuminate, deeply cut into unequal-sided, bluntly-toothed, oblong, rhomboidal pinnules. *sori* two to twelve to a pinnule, small. Tropical Asia. SYN. *D. khasyiana.* (H. S. F. 1, 47.)

D. s. rhomboidea (rhomboidal). Similar in texture and hairiness to type, but somewhat larger in all its parts; lower pinnules lanceolate-deltoid, 1½in. long, cut down nearly to the rachis into oblong lobes.

D. tenuifolia (slender-leaved).* *rhiz.* stout, creeping, densely fibrillose. *sti.* strong, erect, 6in. to 12in. long. *fronds* 1ft. to 1½ft. long, 6in. to 9in. broad, ovate, quadripinnatifid; lower pinnæ ovate-lanceolate, 4in. to 6in. long, 2in. to 3in. broad; pinnules lanceolate, their segments cut down to the rachis below with toothed cuneate lobes. *sori* terminal, usually solitary. Tropical Asia.

D. Tyermanni (Tyermann's).* *rhiz.* wide-creeping, densely scaly; scales linear, white. *sti.* 2in. to 3in. long, naked, reddish. *fronds* 4in. to 6in. long, deltoid, three to four-pinnatifid; lower pinnæ largest, stalked, deltoid, unequal-sided; lowest pinnules stalked, cuneate-oblong or deltoid, with falcate-deltoid entire upper, and cuneate-oblong pinnatifid lower, segments. *sori* at the base of ultimate lobes, three-quarters of a line broad. West Coast of Africa, 1871. (G. C. 1871, 870.)

D. villosa (hairy). A synonym of *D. marginalis.*

FIG. 626. DAVALLIA PALLIDA.

DAVIDSONIA (named after the discoverer of the plant, who first met with it in a sugar plantation). ORD. *Saxifrageæ.* A remarkably handsome stove plant, with an erect habit, and of apparently easy culture. Propagated by portions of stem, inserted in sand or cocoa-nut fibre, under a bell glass, in bottom heat.

D. pruriens (itching).* *l.* alternate, impari-pinnate, 2ft. long, furnished with pungent hairs; pinnæ in five or six pairs, the terminal *one* about 9in. long; petioles and rachises thickly

Davidsonia—*continued.*

covered with short stiff hairs, and furnished between and below the pinnæ with a narrow, lobate, biserrated, hairy wing. When young, the leaves are of a bright red colour. Australia, 1877.

DAVIESIA (named in honour of the Rev. Hugh Davies, a Welsh botanist). ORD. *Leguminosæ*. A large and elegant genus of greenhouse shrubs or undershrubs, containing fifty-five species, all natives of Australia. Flowers orange-yellow, or red, usually small, in axillary or lateral racemes or pedunculate umbels, occasionally reduced to short clusters, or rarely solitary or terminal; calyx teeth short; petals on a slender claw. Leaves alternate, simple, entire, coriaceous or rigid, either flat and horizontal or vertical, or terete and spinescent; stipules none, or very minute. They require a compost of loam and peat, with a little sand, and delight in an airy situation in the greenhouse. Propagated by cuttings, made of firm young shoots, and placed in sand, under a bell glass; or by seeds, when obtainable, which should be sown in a slight hotbed, about March. The two species here given are probably amongst the ones most generally grown.

Daviesia—*continued.*

D. latifolia (broad-leaved). *fl.* orange-yellow, small, numerous, in racemes of 1in. to 2in., often flowering from near the base; bracts ovate or oblong, densely imbricate before the flowers are full grown; pedicels rarely exceeding the bracts till after flowering. May. *l.* 2in. to 3in. long, ovate-elliptical or ovate-lanceolate, usually terminating in a callous point. *h.* 2ft. to 5ft. 1805. A glabrous shrub. (B. M. 1757.)

FIG. 628. DAVALLIA REPENS (see page 447).

D. umbellulata (small-umbelled). *fl.*, racemes in some specimens shorter than the leaves, in others twice as long, flowering from the middle upwards, or at the end only; calyx about one line long, the teeth short and obtuse; petals twice as long as the calyx. April. *l.* lanceolate or linear-lanceolate, ¼in. to ¾in. long, one-nerved, flat, not reticulate. Branches sulcate. *h.* 2ft to 4ft. 1816. A slender, much-branched shrub.

DAVYA (named after Sir H. Davy, an eminent chemist). ORD. *Melastomaceæ*. This genus is synonymous with **Meriania** (which *see*).

DAY LILY. *See* **Hemerocallis.**

DEADLY NIGHTSHADE. A common name for *Atropa Belladonna.*

DEAD NETTLE. *See* **Lamium.**

DEADWORT. *See* **Sambucus Ebulus.**

DEALBATE. Covered with an opaque white powder.

DEAL-WOOD. Chiefly the timber of *Pinus sylvestris.*

DEATH'S HEAD HAWK MOTH. *See* **Sphinx atropus.**

DEATH'S HERB. A common name for *Atropa Belladonna.*

DECABELONE (from *deka*, ten, and *belone*, a needle; in reference to the ten filiform processes of the outer corona). ORD. *Asclepiadeæ.* Very showy dwarf greenhouse succulent perennials. For culture, *see* **Stapelia.**

D. Barklyi (Barkly's).* This interesting plant is closely allied to *D. elegans*, the flowers being very similar, but the branches have nearly twice the number of angles; and the two lateral setæ of the spines are more slender, and deflexed instead of erect. It was discovered by Sir H. Barkly, about 1872, growing near the Orange River, Little Namaqualand. (B. M. 6203.)

D. elegans (elegant). *fl.* large, solitary or twin, springing from the base of the young shoots; corolla yellowish-white, spotted with blood-red, funnel-shaped, 2in. long and 1½in. in diameter at the mouth. Stems tufted, seven to nine-angled; on these are placed elevations bearing three-branched spines. *h.* 6in. Angola, 1873. (B. M. 6115.)

DECAISNEA (named in honour of Joseph Decaisne, a distinguished French botanist, for a long time Director of the Paris Jardin des Plantes; born 1807, died 1882). ORD. *Berberideæ.* A monotypic genus. This, perhaps, has not been tried in the open air in this country, but it thrives in any good loamy soil if planted out in a cool conservatory. Propagated by imported seeds; or by cuttings, struck in a cool, damp frame.

D. insignis (remarkable).* *fl.* greenish, in terminal racemes; sepals six, petaloid, narrow, sub-imbricate; petals none. May. *fr.* globose, edible. *l.* pinnate. *h.* 8ft. Sikkim Himalayas, at a great height. An erect shrub. (B. M. 6731.)

DECANDROUS. Having ten stamens.

DECIDUOUS. Falling off. Leaves which are shed annually are said to be Deciduous, as are also trees that annually lose their leaves.

DECIDUOUS CYPRESS. *See* **Taxodium distichum.**

DECKERIA. *See* **Iriartea.**

DECLINATE. Bending downwards.

DECOMPOUND. A leaf is said to be Decompound when it is twice or thrice pinnate. See Fig. 629.

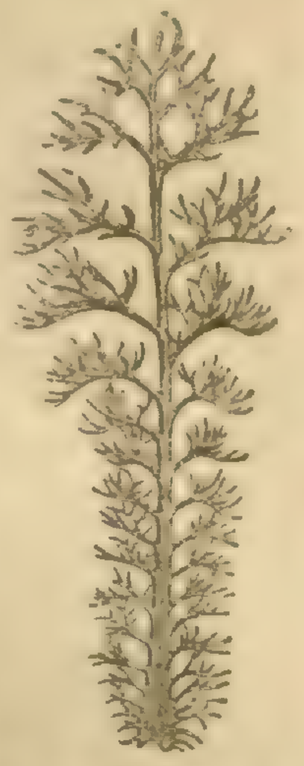

FIG. 629. DECOMPOUND LEAF (CHAMOMILE).

DECUMARIA (from *decuma*, a tenth; in reference to the tenfold structure of some of the flowers). ORD. *Saxifrageæ.* A very ornamental hardy deciduous twiner, admirably adapted for growing against walls, or on trellis-work. It thrives well in a dry, warm border of light rich soil; and is readily increased by cuttings, which should be made in summer, and placed under a hand-light, in a shady situation.

D. barbara (wild).* *fl.* white, very sweet-scented, disposed in terminal corymbs. June. *l.* opposite, glabrous, ovate-oblong, acute at both ends. South United States, 1785. SYN. *D. sarmentosa.*

D. sarmentosa (twiggy). A synonym of *D. barbara.*

DECUMBENT. Lying on the ground.

DECURRENT. Running down. A leaf is said to be Decurrent when it extends down the leafstalk or stem.

DECUSSATE. Leaves and branches are said to be Decussate when they cross each other at right angles, forming a kind of square, or four angles.

DEFLEXED. Bent downwards.

DEFOLIATION. The shedding of the leaves.

DEHERAINIA (named after Pierre Paul Deherain, Assistant Naturalist of the Museum of the Jardin des Plantes). ORD. *Myrsinaceæ.* An interesting and remarkable stove shrub, thriving in rich sandy loam and fibrous peat. Heeled cuttings of ripened shoots will root in sand, if placed under a glass, in bottom heat.

D. smaragdina (emerald-green). *fl.* green, about 2in. in diameter, Primrose-like, disposed in clusters concealed below the leaves. *l.* oblong-lanceolate, serrulate, hirsute along the nerves. *h.* 3ft. Mexico, 1876. SYN. *Theophrasta smaragdina.* (B. M. 6373.)

DEHISCENT. Gaping; opening. An expression often applied to the mode in which the anthers or the fruits burst open and discharge their contents.

DELABECHEA (named in honour of the late Sir H. T. De la Bèche, an eminent geologist). Bottle-tree of North-eastern Australia. ORD. *Sterculiaceæ.* This genus is now included by Bentham and Hooker under **Sterculia** (which *see*).

DELARBREA (named after M. Delarbre, a French naturalist). ORD. *Araliaceæ.* A genus containing two species of stove evergreen tall shrubs, natives of New Caledonia. For culture, *see* **Aralia.**

D. spectabilis (notable). This is the correct name of plant described in this work as *Aralia concinna.*

DELIMA (from *delimo*, to shave off; in reference to the leaves being used for polishing). SYN. *Trachytella.* ORD. *Dilleniaceæ.* A handsome stove evergreen climbing shrub, with the habit of *Tetracera.* It thrives in a compost of peat and turfy loam, to which may be added a little silver sand and small pieces of charcoal. Cuttings of young shoots will root, if inserted in sand and placed in bottom heat, in April. Perfect drainage is essential.

D. sarmentosa (twiggy). *fl.* white, in terminal panicles. *l.* obovate, ovate, or broadly lanceolate, rigid, very scabrid, parallel-veined. Tropical Asia, 1820.

DELOSTOMA (from *delos*, manifest, and *stoma*, a mouth; in allusion to the wide mouth of the flower). ORD. *Bignoniaceæ.* A small genus, containing three or four species, all natives of Columbia and Peru. The one described below is a handsome, robust-growing stove tree. For culture, *see* **Bignonia.**

D. dentatum (tooth-leaved). *fl.* bluish-white, large; corolla sub-campanulate, having a limb nearly 2in. across, of spreading orbicular lobes; racemes erect, three or four-flowered. October. *l.* elliptic-oblong, toothed, downy beneath. Peru.

DELPHINIUM (Greek name used by Dioscorides). Larkspur. ORD. *Ranunculaceæ.* Very ornamental hardy annuals, biennials, or perennials, with erect branching habit. Flowers blue, purple, pink, or white, rarely yellow, racemed or panicled, bracteate; sepals five, petal-like, irregular, the upper one drawn out below into a spur; petals two to four, two upper ones drawn out at the base into appendages within the sepaline spur. Fruit a many-seeded follicle (see Fig. 630). Leaves stalked; cauline ones palmately-multifid. Although the plants belonging to this genus are of very easy cultivation, thriving in almost any position with fair treatment, yet, like most other cultivated subjects, their real beauty and merit can only be estimated by bestowing special attention upon them. The soil should be dug to a good depth (if trenched, so much the better), and a liberal supply of well-rotted manure incorporated. The distance between the plants should be 3ft. each way, if arranged by themselves in beds; or, if placed at the back of a mixed border—a position generally assigned to the tall perennial species or varieties, and one for which they are well adapted—8ft., or even more, may be allowed. The dwarf annuals, when cultivated in pots, are very ornamental for greenhouse decoration.

FIG. 630. DEHISCING FOLLICLE OF DELPHINIUM.

Propagation. All the herbaceous sorts may be increased

Delphinium—*continued.*

by root division, by cuttings, or by seeds. The first-named method is the best for perpetuating named varieties. The old plants should be cut down after flowering, when young growths will proceed from the base, and the whole may be lifted and carefully divided. Seeds of these often take a long time to germinate. Cuttings of the young shoots, taken off in either autumn or spring, root readily if inserted singly in pots, and placed in a cold frame; these will flower the following season, at the same time as the offsets. Seeds of the annual species or varieties may be sown out of doors, in a warm border, in April; or in pans, to be placed either in frames or outside. So soon as the plants are up, they should be pricked off into light, rich soil, where they will make rapid progress. There are numerous and beautiful hybrid varieties, with single, and also many with double, flowers; these are, for the most part, superior to the normal species, the most distinct of which are here described, all being perennials, except where otherwise stated.

FIG. 631. DOUBLE-FLOWERED FORM OF DELPHINIUM AJACIS.

D. Ajacis.* Common Larkspur. *fl.* showy blue, or sometimes reddish or white, not numerous, in terminal racemes, sometimes forming an irregular panicle; spur of the calyx as long as the rest of the flower, or rather shorter; petals two. Summer. *l.*, radical ones shortly stalked; stem ones sessile; all divided into fine linear, deeply-cut segments. Branches few, spreading. *h.* 1ft. to 1½ft. British cornfields (especially round Cambridgeshire). An erect, hairy annual. The specific name is said to have been derived from the supposition that the form of the letters A J A could be traced in the lines on the petals of the flower. In many works on the British Flora, the species *D. consolida* has been confused with this. A double-flowered form is shown at Fig. 631.

D. albiflorum (white-flowered). A synonym of *D. hybridum ochroleucum*.

D. azureum (blue).* *fl.* beautiful sky-blue, large; racemes straight; petals all bearded at the apex, lower ones very villous. May to July. *l.* three to five-parted, many-cleft, with linear lobes; petioles hardly dilated at the base. *h.* 3ft. North-west America, 1805. (B. R. 1999.)

D. Brunonianum (Brown's). *fl.* light blue, shading to purple on the margins, centre black; large. June and July. *l.*, lower ones reniform, but divided into deeply-cut segments; upper ones

Delphinium—*continued.*

tripartite. *h.* 6in. to 1ft. Thibet, 1864. A rare species, having a very strong musky odour. (B. M. 5461.)

D. cardinale (cardinal).* *fl.* bright scarlet, with the petal limbs distinctly yellow; disposed in spikes. August. *l.* smooth, deeply palmately-lobed, rather fleshy. *h.* 3ft. to 4ft. California. A very handsome annual species, remarkably well suited for borders or rockeries, with a good depth of rich soil to facilitate the development of its long fleshy roots. (B. M. 4887.)

D. cardiopetalum (heart-petalled). *fl.* dark bluish-violet; racemes crowded. June. *l.* smooth, ternate, with multifid segments and linear lobes; those of the branches, as well as the lower bracts, are multifid. Stem erect, a little branched. *h.* 1ft. Pyrenees, 1818. Annual.

D. cashmirianum (Kashmir).* *fl.* 1in. to 2in. across, with broad sepals, of a distinct pale blue colour, corymbose. July. *l.* tufted, with long petioles, palmately-lobed, 4in. or more across, deep green, slightly hairy. *h.* 1ft. to 1½ft. Kashmir, 1875. (B. M. 6189.)

D. cheilanthum (lip-flowered). *fl.* dark blue; petals shorter than the calyx, two lower ones with obliquely-inflexed, ovate, entire limbs. June to September. *l.* five-parted, with oblong, acuminated, sub-trifid, and somewhat toothed lobes. Stem erect, branched. *h.* 2ft. to 3ft. Dahuria, 1819. (B. R. 473.)

D. consolida (consolidated). *fl.*, racemes rather few-flowered, loose; pedicels shorter than the bracts; petals all combined into one body. Summer. *l.* dissected into narrow linear lobes. *h.* 1ft. to 1½ft. Europe. Annual.

D. dasycarpum (hairy-fruited).* *fl.* beautiful blue, with dark brown petals, rather large; racemes simple, pubescent; pedicels thrice as long as the bracts. June. *l.* pubescent, five-lobed; lobes lanceolate, somewhat trifid, deeply toothed at the apex; petioles not dilated at the base. *h.* 4ft. to 6ft. Caucasus, 1819.

D. elatum (tall). A synonym of *D. exaltatum*.

FIG. 632. FLOWERING BRANCH OF DELPHINIUM EXALTATUM.

D. exaltatum (exalted).* *fl.* blue, or sometimes white, middle-sized; racemes straight; spur straight, length of the calyx; limb of lower petals bifid. Summer. *l.* flat, cleft into three to seven parts beyond the middle, with wedge-shaped lobes, which are trifid or jagged, and acuminated at the apex; petioles not dilated at the base. *h.* 3ft. to 6ft. North America, 1758. SYN. *D. elatum*. See Fig. 632. (B. M. 1791.)

Delphinium—*continued.*

D. formosum (beautiful).* *fl.* sky-blue, shaded with indigo; spur rather long, two-cleft, of a violet hue; sepals longer than the petals; spikes long. Summer. *l.* alternate, greyish-green, unequally palmate, lower segments stalked, upper ones sessile and tripartite. *h.* 1½ft. to 3ft. Orient. (F. d. S. 1185.)

D. grandiflorum (large-flowered).* *fl.* blue, and the intermediate shades to white, either double or single, large; petals shorter than the calyx, two lower ones somewhat orbicular, with obliquely inflexed entire borders; racemes spreading, few-flowered, diverging. June. *l.* palmately many-parted into distant linear lobes. *h.* 1ft. to 2ft. Siberia, 1816. (B. M. 1686.) A very handsome plant, with several varieties, the best of which is perhaps *chinensis*, in which the racemes are many-flowered, lateral ones diverging. Other forms are: *album* (white), *album-pleno* (double-white), *flore-pleno* (double-blue-flowered), *pallidum*, and *rubrum*.

D. hybridum (hybrid). *fl.* blue, with the two lower petals bearded with white; racemes crowded; spur straight, longer than the flowers. June to August. *l.* many-parted, with linear lobes; petioles dilated and sheathing at the base. *h.* 3ft. to 4ft. Tauria, 1794. Lower part of the plant smooth, upper part velvety-pubescent.

D. h. ochroleucum (yellowish-white). *fl.* white, smooth on the outside; racemes elongated, crowded; bracts membranaceous, broad-lanceolate; spur straight, blunt, rather longer than the pedicel. July and August. *l.* many-parted, with linear lobes; petioles dilated and sheathing at the base. *h.* 3ft. Armenia, 1823. Syn. *D. albiflorum.*

D. laxiflorum (loose-flowered). *fl.* blue; racemes loose, branched. June. *l.* three to seven-lobed, with the lobes oblong, acute, deeply pinnatifid; upper ones somewhat three-parted, with narrow, entire lobes; petioles not dilated at the base. *h.* 4ft. to 6ft. Siberia. (B. R. 24, 30.)

D. mesoleucum (white-centred). *fl.* blue, with pale yellow or whitish petals. June. *l.* rather dilated at the base, with wedge-shaped segments, which are deeply serrated at the top. Upper part of the stem, as well as the peduncles, pubescent. *h.* 3ft. Native country unknown. 1822.

Fig. 633. Delphinium nudicaule, showing Habit and Single Flower.

D. nudicaule (naked-stemmed).* *fl.* red; petals clear yellow, lower ones spathulate, with a two-cleft, fringed limb, upper ones elongated, prominent, hairy at the ends; spur nearly twice the length of the calyx; raceme loose. Summer. *l.* fleshy, somewhat peltate, tripartite; sub-divisions of lower leaves obcordate with notched lobes, which, in the upper ones, are oblong and entire. *h.* 10in. to 18in. California, 1869. See Fig. 633. (B. M. 5819.)

D. pictum (spotted). *A synonym of D. Requienii.*

D. Requienii (Requien's). *fl.* bluish, hispid; bracts inserted on the middle of the pedicels; spur almost as long as the calyx. June. *l.* on long stalks, lower ones cleft into five broad cuneated three to five-toothed lobes, upper ones divided into five-linear entire lobes. *h.* 1½ft. Lower part of herb smooth, or scarcely pubescent, upper part hispid with long crowded spreading hairs. South-west Europe, 1824. Biennial. Syn. *D. pictum.*

D. Staphysagria (Stavesacre). *fl.* blue, loose, with whitish petals; bracteoles inserted at the base of the pedicels; spur very short; pedicels twice as long as the flower. May. *l.* five to nine-cleft. *h.* 2ft. to 3ft. South Europe, 1596. A large erect biennial herb. (B. M. Pl. 4.)

Delphinium—*continued.*

D. tricorne (three-horned). *fl.* very beautiful blue; petals shorter than the calyx. May. *l.* five-parted, with three to five-cleft lobes, and linear lobules; petioles smooth, hardly dilated at the base. *h.* 9in. North America, 1806. (L. B. C. 306.)

D. triste (sad). *fl.* dark-brown, suffused with a little red at the edges of the sepals, and with a somewhat violaceous spur; racemes loose. July to September. *l.* three to five-parted; lobes narrow, somewhat pinnatifid, acute; upper leaves three-parted, with entire lobes; petioles not dilated at base. *h.* 2ft. Siberia, 1819.

DELTOID. Shaped like the Greek Δ.

DEMIDOVIA. A synonym of **Tetragonia.**

DEMOCRITEA. A synonym of **Serissa.**

DENDROBIUM (from *dendron*, a tree, and *bios* life; the species are epiphytal in their native habitats). Syn. *Pedilonum.* Ord. *Orchideæ.* A large and elegant genus of stove and greenhouse orchids. A few species are very fragrant; but the scent of some is objectionable. Lip more or less contracted at base into a claw, lying upon, or adnate to, the foot of the column; pollinia four. "The genus," says Dr. Lindley, "varies extremely in the habit of its species, some being little larger than the mosses among which they grow, while others are surpassed in stature by few of their order. . . . . There are some species of which the foliage is ancipitous, others having it terete, while, in the majority, it is in the usual flat condition. A few have no other stems than a wiry creeping rhizome; others have small conical pseudo-bulbs; many form clavate horny stems, leafy only at the summit; but the greater part produce long leafy branches."

Cultivation. With but few exceptions, Dendrobiums are very easily managed; but it should be borne in mind by those who undertake their culture, that they require a decided period of rest, or "drying off," as the process is frequently termed. There is considerable diversity in the habit and style of growth of the various members of this genus; and, as many of the kinds not only thrive best, but display their beauties to a greater advantage, when suspended from the roof either in baskets or upon blocks of wood, it will at once be obvious that by this means a large saving of space may be effected. When placed in baskets, they should be surrounded with a little rough peat and sphagnum; but, when grown upon blocks, sphagnum only should be used, and this must be fastened with some fine copper wire, which will also serve to fix the plant firmly. In putting orchids upon blocks, it is of the highest importance that they should be firmly fixed; if this is not done, they are apt to get their first roots damaged; but, as a rule, after they are once established, the roots will hold them tightly enough. Plants cultivated upon blocks require greater attention in the matter of water than those grown in pots. During the growing season, Dendrobiums should be sprinkled with the syringe twice each day, morning and evening being the best times to perform the operation; in addition, it will also be necessary to lift them down twice or three times a week, and give them a dipping in a tub of water. This requires care, in order to preserve the roots and young immature growths from injury; for, at this period, both roots and shoots are very tender and brittle. It must be remembered, in syringing, dipping, or otherwise, that cold water is highly injurious; therefore, it should be warmed to the same temperature as that of the house. As the growths reach maturity, withhold the water supply, and remove the plants into a cooler and drier atmosphere, with full exposure to light and sunshine, to thoroughly ripen them. Water must be very cautiously applied during the resting period, as it is liable to start the plants prematurely. Sufficient only must be given to prevent shrivelling.

Dendrobiums in pots should be planted in equal parts fibrous peat and sphagnum, with a liberal addition of charcoal. They require to be elevated upon a cone of soil above the rim of the pot, and should be pressed down, or potted firmly. Perfect drainage is absolutely essential

Dendrobium—*continued.*

to success. In pots, they enjoy a liberal supply of water during their period of growth; but care must be exercised when syringing, as the water is apt to lie in the sheaths of the young pseudo-bulbs, and cause injury. The plants are subject to the attacks of Yellow Fly when young, and to Scale when they are mature. The first-named pest must be exterminated on its earliest appearance, by slight fumigations with tobacco or tobacco-paper; and the Scale should be carefully washed off with a mixture of soft soap and tepid water.

Dendrobiums, when in flower, may be used for almost any purpose of decoration. They beautify the plant house, the majority of them lasting several weeks in perfection, if not sprinkled with water from the syringe. They may be taken into the dwelling house, and will be found charming subjects for the drawing-room or boudoir; while many of them take first rank as subjects for exhibition.

The enumeration of species is confined to such as are of known excellence, or are offered in trade lists. Many species, and some of the varieties and hybrids that are periodically figured and described at length, are frequently rare and often unique; and, for various reasons, it is probable that the majority of these do not become common or obtainable for many years afterwards. To give anything like an exhaustive review of the entire genus would, in itself, amount to a moderate-sized volume.

D. aduncum (hooked). *fl.* white, tinged with rose, small, appearing at different times of the year. *h.* 2ft. Manilla, 1842. An evergreen species, with a rather straggling habit. (B. R. 1846, 15.)

D. aggregatum (clustered).* *fl.* deep yellow throughout, borne in arching racemes about 6in. long. March to May. Pseudo-bulbs thick and deep green, bearing a solitary leaf. *h.* 3in. to 4in. Northern India, 1837. Greenhouse. This plant is best grown fastened on a large block of wood. (B. R. 1695.) The variety *majus* is a very good one.

D. albo-sanguineum (white and crimson). *fl.* soft creamy-white, twin or tern, very large, about 4in. across; petals twice as broad as the sepals, with a few blood-red streaks at the base; labellum with a large reddish-crimson blotch in the middle. May and June. Pseudo-bulbs from a few inches to 1ft. long, and nearly 1in. in diameter. Moulmein, 1851. Stove. (P. F. G. 57.)

D. album (white). A synonym of *D. aqueum.*

D. amœnum (pleasing). *fl.* pure white, tipped with violet-purple, scattered along the long slender stems, violet-scented; throat yellow; labellum white, with a slight tinge of magenta at the base. Pseudo-bulbs 1ft. to 1½ft. long. Himalaya, 1843. A slender-growing pendulous stove deciduous species. (B. M. 6199.)

D. Aphrodite (Aphrodite).* *fl.* amber, produced sparingly from the nodes of the last matured growth; lip bright orange, margined with white, and with a large blood-red spot at the base. July. Pseudo-bulbs 4in. to 8in. high, ½in. in diameter through the very prominent nodes, which are a distinguishing feature in the present species. Moulmein, 1852. Erect greenhouse deciduous species. SYN. *D. nodatum.* (F. d. S. 1582.)

D. aqueum (watery). *fl.* creamy-white, solitary or two together, large, rising from the axils of the leaves; lip recurved from the middle, ovate-rhomboid, obscurely three-lobed; two lateral lobes small, the intermediate one triangular; the lower half has an elevated ridge, and under its termination a depression, and that part has a deep yellow blotch; under side glabrous, the upper surface very downy and striated, the margin of the terminal lobe fringed with soft ciliæ. November. *l.* distichous, ovate, the upper ones smaller and lanceolate, all sub-membranaceous, sharply and suddenly acuminated, striated with the longitudinal nerves, dark green above, paler and yellower beneath. Stem stout, jointed, compressed, striated, leafy (at the time of flowering), yellow-green. Bombay, 1842. Stove. (B. M. 4640.) SYN. *D. album.*

D. aureum (golden).* *fl.* amber, produced from the nodes of two-year-old pseudo-bulbs, in bunches of from four to six, very fragrant; lip amber, with brown and purple markings. February. Pseudo-bulbs 1ft. to 1½ft. long, ¾in. in diameter. India, 1837. A pendulous stove or greenhouse deciduous species. SYN. *D. heterocarpum.* (B. M. 4703.) The variety *philippinense* is a remarkable long-stemmed form, with slightly scented Primrose-coloured flowers. 1880.

D. barbatulum (small-bearded). *fl.* ivory-white, with a slight tinge of pink, small, in dense erect racemes. East Indies, 1844. A robust greenhouse plant, attaining about 1ft. in length, and succeeding best on a block of wood. (B. M. 5918.)

D. Bensoniæ (Benson's).* *fl.* about 2in. across, produced in twos or threes at the end of the stem; sepals and petals waxy-white; lip white, with an orange centre, and ornamented near the base with two large velvety-black blotches. May and June. Burmah, 1867. An erect, stiff-growing, greenhouse deciduous species, with pseudo-bulbs 1ft. to 1½ft. long, and about ½in. in diameter. (B. M. 5679.) Two varieties of this fine plant have been introduced: *aurantiacum* (orange, brown), Moulmein, 1874; and *xanthinum* (white, yellow), 1878.

D. bigibbum (double-spurred).* *fl.* rich rosy-pink, 1in. to 2in. across, disposed in six to twelve-flowered arching spikes, which are produced from the leafy part of one-year and older bulbs. September and October. Pseudo-bulbs 1ft. to 1½ft. long, carrying on their upper part from four to six closely-arranged leaves. *h.* 1ft. Queensland. An erect-growing greenhouse evergreen species. (B. M. 4898.) The variety *superbum* grows somewhat stiffer and stouter than the type, and has superior flowers, both in size and colour. 1878. (F. M. n. s. 229.) There is also a form (*candidum*) with white flowers.

D. binoculare (two-eyed). *fl.* copper-coloured, rather small; apex of the lip golden-yellow, with one large brownish or purplish blotch on each side of its disk; raceme sub-erect. Summer. Burmah, 1869. A tall, slender-growing greenhouse species.

D. Boxallii (Boxall's).* *fl.* scattered along the previous year's knotty growth, 2in. across; sepals and petals white, beautifully tipped with purple; lip same colour, with a large blotch of rich yellow. February and March. Pseudo-bulbs from 2ft. to 3ft. long, and ¼in. through the nodes. Moulmein. An elegant stove deciduous species, particularly adapted, from its pendulous habit, for growing on a block, although it thrives well under pot culture. (F. M. n. s. 114.)

D. Brymerianum (Brymer's).* *fl.* solitary or in pairs, or in short spikes of threes and fours from the upper part of two-year and older bulbs; sepals and petals glossy yellow; lip yellow, furnished with a very deep, branched, papillose fringe. March and April. *l.* about 5in. long and 1in. broad, light green. Pseudo-bulbs 2ft. high, and ¾in. in diameter, bearing from eight to twelve leaves. Burmah, 1875. A very remarkable and handsome erect-growing stove evergreen species. (B. M. 6383.)

D. Bullerianum (Buller's). A synonym of *D. gratiosissimum.*

D. Calceolaria (slipper-like). *fl.* of a uniform bright yellow, large, produced on a raceme twelve or more together. Summer. Pseudo-bulbs about 4ft. high. India, 1820. A large-growing stove evergreen species. Its name is usually misspelt *D. Calceolus.*

D. Cambridgeanum (Duke of Cambridge's). A synonym of *C. ochreatum.*

D. canaliculatum (channelled). *fl.* sweet-scented, disposed on a stem about 1ft. long; sepals and petals yellow and white; lip white, with a mauve disk. *h.* 3in. North-east Australia, 1865. A pretty little greenhouse species, of easy culture. SYN. *D. Tattonianum.* (B. M. 5537.)

D. cariniferum (keel-bearing).* *fl.* white, in branches of four or more from one-year and older bulbs; sepals tinged with yellow at the tips; labellum orange, tipped with white, and furnished with a cinnabar-red crest. April. Pseudo-bulbs erect, evergreen, 1ft. long by ½in. in diameter. Burmah, 1869. Greenhouse.

D. c. Wattii (Watt's). This differs from the type in its larger flowers, rather longer spur, the longer narrow mid-lobe, the yellow bands of the lip, and the faintly hairy sheaths. Munipore, 1883. (B. M. 6715.)

D. chlorops (green-eyed). *fl.* pale nankeen-colour; base of lip bright pea-green, small. Bombay, 1842. A very pretty free-flowering stove species.

D. chrysanthum (golden-flowered).* *fl.* deep rich yellow, in twos and threes on the leafy stems; labellum fringed, and having a dark crimson blotch. September. Pseudo-bulbs from 3ft. to 6ft. long, about ½in. in diameter. Nepaul, 1828. A handsome greenhouse deciduous species, most successfully grown in a basket, suspended from the roof. (B. R. 1299.) The variety *microphthalmum* has the fringe of lip very short, blotches two or four, pallid brown, 1879.

D. chrysotis (golden).* *fl.* about 2in. across; sepals and petals long and narrow, rich golden-yellow; lip orange, with two large purple blotches at the base, heavily fringed or bearded; racemes drooping, several springing from one bulb, four to eight-flowered. Summer. Pseudo-bulbs 2ft. to 6ft. long, ¼in. in diameter, with dark, rather prominent nodes to every inch or two of the slender, rod-like stem. Assam, 1878. A very magnificent erect stove evergreen species, closely allied to *D. fimbriatum.* (B. M. 6013, under name of *D. Hookerianum.*)

D. chrysotoxum (golden-arched).* *fl.* over 1in. across, produced from the leafy part of both old and young pseudo-bulbs; sepals and petals pale yellow; lip a deeper yellow; raceme drooping, 6in. to 12in. long. March and April. Pseudo-bulbs 1ft. long, and 1in. in diameter, bearing from four to six stout leaves arranged on the upper part. Moulmein, 1845. A strong, erect greenhouse evergreen species. (B. M. 5053.)

D. clavatum (club-shaped).* *fl.* bright yellow, with a crimson spot in the centre of the lip, produced in drooping spikes from the tops of the stems. Summer. Pseudo-bulbs 1ft. to 3ft. high, and ¾in. in diameter. From six to eight leaves clothe the upper part of the stem. Assam, 1851. An erect stove evergreen species, best adapted for growing in pots, in a peat soil. (L. & P. F. G. ii. 189.)

Dendrobium—*continued.*

D. crassinode (thick-knotted).* *fl.* from the last matured growth, each node producing from two to four stout blossoms; sepals and petals waxy-white, tipped with rich purple; lip white, with an orange blotch at the base. February and March. Pseudo-bulbs 1ft. to 1½ft. long, and ½in. in diameter. Burmah, 1868. This species is remarkable for the enormously swollen joints of the stem, which are 1in. in diameter, and arranged about 1in. apart. A pendulous stove deciduous species, best grown in a small basket or on a block of wood. (B. M. 5766.) There are two or three very good varieties, including *albiflorum*, pure white, with a dark yellow disk; and *Barberianum*, a great improvement on the type, with more highly-coloured flowers, which are of greater substance, the pseudo-bulbs also are stouter.

D. crepidatum (slippered). *fl.* from the last matured growth, two and three together, about 2in. across, on somewhat long footstalks; sepals and petals white, tipped with pink; lip stained with yellow. March. Pseudo-bulbs 1ft. to 1½ft. long, with white lines running their entire length. Assam. A very handsome drooping greenhouse deciduous species, well suited for growing in a basket or on a block. (B. M. 4993.)

D. cretaceum (chalked). *fl.* chalky-white, solitary from the joints of the long leafless stems, rather small, downy; lip with a pale yellow disk, pencilled with crimson; margin ciliated. May. Pseudo-bulbs 8in. to 14in. long, ½in. in diameter. India, 1846. A compact-growing pendulous stove deciduous species. (B. M. 4686.)

D. crystallinum (crystalline).* *fl.* of moderate size, freely produced from the last matured growth; sepals and petals white, tipped with rose or purple; lip orange at the base, tipped with purple. Summer. Pseudo-bulbs 1ft. to 1½ft. long, ½in. in diameter. Burmah, 1868. An erect-growing stove deciduous species, allied to *D. Bensoniæ*. (B. M. 6319.)

D. cucullatum (hooded). *fl.* 1½in. to 2in. in diameter, suffused with a pale pink tint; lip pale yellow. India, 1835. Very closely allied to *D. Pierardii*, from which it is principally distinguished by the lip being more ovate in form and more open at the base, the sides not being rolled round the column to half the extent they are in *D. Pierardii*, to which, however, the present species is inferior from a horticultural point of view. Greenhouse. (B. M. 2242.)

D. cupreum (coppery). A synonym of *D. moschatum*.

FIG. 634. FLOWER OF DENDROBIUM DEVONIANUM.

D. Dalhousianum (Lady Dalhousie's).* *fl.* large, 3in. to 5in. across; sepals and petals buff, shaded with pale lemon; lip of the same colour, spotted at the base with two large blotches of dark crimson, and margined with rosy-pink; racemes drooping, produced from the growth of the previous year, six to ten-flowered. April and May. Pseudo-bulbs stout, erect, 3ft. to 5ft. high, about 1in. in diameter, with purple lines running their entire length. India, 1837. A noble strong-growing stove evergreen species, requiring, however, a considerable space to grow it in anything like perfection. (P. M. B. xi. 145.)

D. densiflorum (dense-flowered).* *fl.* rich clear amber, produced in numerous long dense pendulous racemes, which spring from immediately below the junction of leaf and stem; lip orange, delicately fringed. April and May. Pseudo-bulbs somewhat club-shaped, about 1ft. in height, furnished near the apex with several broad, oblong, deep green, shining leaves. India, 1829. A very handsome free-flowering stove evergreen species. (B. R. 1828.)

D. d. albo-luteum (white and yellow). A very floriferous form, differing from the type "in the greener, glossier pseudo-bulbs and leaves, and in the long lax panicle and colourless transparent sepals and petals," which are sometimes tinged with pink; lip

Dendrobium—*continued.*

wholly orange, or orange-red. Moulmein. SYN. *D. thyrsiflorum*. (B. M. 5780.)

D. d. Schrœderi (Schrœder's). This hardly differs from the last-named variety, except in the purer white of the flowers, and the golden labellum gradually shading off towards the margin into a paler yellow. India, 1870.

D. Devonianum (Duke of Devonshire's).* *fl.*, sepals and petals soft creamy-white, tinged with pink, the latter in addition being tipped with purplish-magenta; lip white, margined with purple and spotted with rich orange at the base, and bordered all round with a delicate lace-like frill, which gives the plant a charm that is quite unique. Well-grown pseudo-bulbs often carry from ninety to a hundred flowers, which are about 2in. across. March and April. Pseudo-bulbs 1ft. to 3ft. long, ½in. in diameter. East Indies, 1837. A very beautiful pendulous stove deciduous species, sometimes called the King of Dendrobiums. It should be grown either in a basket or upon a block of wood. See Fig. 634. (B. M. 4429.)

D. D. candidulum (white). *fl.* pure white, with a yellow throat. 1876.

D. D. Elliottianum (Elliott's). *fl.*, sepals and petals with much purple on their tips; whole flower veined with rose. 1876.

D. D. rhodoneurum (red-veined). *fl.*, sepals and petals streaked with dark purple; lip large and round. Moulmein, 1868.

D. dixanthum (double-tinted). *fl.* yellow, produced in clusters of from two to four together, on the leafless stems; disk of the lip of a darker hue, about 2in. across. Spring. Pseudo-bulbs about 2ft. high and ½in. in diameter. Moulmein, 1864. An erect, slender-growing, stove deciduous species. (B. M. 5564.)

D. Draconis (Draco).* *fl.* white, moderate-sized, produced from the points of the last matured growths in bunches of six or more; lip with a red base. Pseudo-bulbs 1ft. to 1½ft. high, ½in. in diameter. Moulmein, 1862. Erect stove evergreen. SYN. *D. eburneum*. (B. M. 5459.)

D. eburneum (ivory-flowered). A synonym of *C. Draconis*.

D. erythroxanthum (red-yellow).* *fl.* orange, striped with purple, small, densely clustered, produced from the last matured growth. May and June. Pseudo-bulbs 3ft. to 4ft. high, about ½in. in diameter. Philippines, 1874. A very rare, erect, stove deciduous species.

D. Falconeri (Falconer's).* *fl.* produced from one-year and older nodes; sepals and petals white, tipped with purple; lip same colour, with a centre of dark purple, margined with orange. May. *l.* 3in. long, ¼in. broad. Pseudo-bulbs about 3ft. long, very knotty, much-branched; nodes ¼in. in diameter, very close together. India, 1847. A pendulous stove evergreen, somewhat difficult to cultivate. (B. M. 4944.)

D. F. albidulum (white). *fl.* pure white, slightly tinged with purple at the tips of the sepals, petals, and lip. India, 1876. (B. H. 1874, 15.)

D. F. giganteum (gigantic). *fl.* much the same in colour, &c., as the type. *l.* 3in. long, 1in. broad. Pseudo-bulbs 1ft. to 1½ft. long, unbranched; nodes ½in. in diameter, about 1in. apart. An erect or semi-erect form.

D. Farmeri (Farmer's).* *fl.* produced upon long pendulous racemes, in the same manner as those of *D. densiflorum*, but not so closely set together; sepals and petals pale straw-colour, delicately tinged with pink, whilst the disk of the lip is of a golden-yellow. May. India, 1847. A beautiful and delicate upright-growing stove evergreen species, attaining about 1ft. in height, bearing several shining dark green leaves towards the top of its club-shaped stems, which are swollen at the base into a kind of pseudo-bulb. See Fig. 635. (B. M. 4659.)

D. F. aureoflavum (golden-yellow). A beautiful variety, distinguished from the type by its bright yellow sepals and petals, and golden lip. Moulmein, 1864. (B. M. 5451.) There is also a white variety, *album*, but both are rare.

D. fimbriatum (fimbriated).* *fl.* about 2in. across, of a thin and delicate texture throughout, deep rich orange; margin of lip beautifully bordered with a golden moss-like fringe; racemes pendulous, six or more flowered, from the upper part of three-year and older pseudo-bulbs. March and April. Pseudo-bulbs 2ft. to 4ft. long, ½in. in diameter, having thirty to forty leaves, which are 6in. long by 1½in. broad. India, 1823. A very showy erect stove evergreen species.

D. f. oculatum (eyed).* A very handsome variety, chiefly differing from the type in having larger flowers, the lips of which are blotched in the centre with deep blackish-purple or dark blood-colour. India. SYN. *D. Paxtoni*. (B. M. 4160.)

D. Findleyanum (Findley's). *fl.* 2in. to 3in. across, produced from the upper nodes of the last matured pseudo-bulbs; sepals and petals white, tipped with pink; lip white, with a large orange-coloured blotch on the anterior part. January and February. Pseudo-bulbs 1ft. or more high; remarkable for the large egg-shaped nodes, which are over ½in. in diameter and 1in. long. Moulmein, 1877. An erect stove deciduous species. (B. M. 6438.)

D. formosum (beautiful).* *fl.* white, 4in. to 6in. across, of great substance, produced from the point, and also from the axils, of the leaves nearest the point of the pseudo-bulb; lip large,

Dendrobium—*continued.*

white, with an orange throat; spikes three to four, or even eight-flowered. Summer. Pseudo-bulbs 1ft. to 1½ft. high, 1in. in diameter, bearing about eight or ten coriaceous leaves. India, 1837. Stove. (B. R. 1839, 64.)

FIG. 635 DENDROBIUM FARMERI.

D. Fytchianum (Fytch's).* *fl.* borne in graceful racemes, 9in. long, proceeding from the extremity of the upright stems; perianth beautiful white; lip three-lobed; lateral lobes small, oblong, incurved, purplish-rose. January. *l.* slender, linear, falling off before the flowers have had time to expand. Stem about 1ft. long, upright. Moulmein, 1864. Stove. (B. M. 5444, under the name of *D. barbatulum.*)

D. Gibsoni (Gibson's). *fl.* rich orange, produced on the ends of the old pseudo-bulbs; lip bright yellow, with two dark spots on the upper part. Summer. *h.* 2ft. Khassya, 1827. A pretty erect-growing evergreen stove species, closely resembling *D. fimbriatum oculatum*, but the lip is longitudinally plicate. (P. M. B. v., p. 169.)

D. gratiosissimum (most favoured).* *fl.* usually in pairs; sepals and petals white, shaded and tipped with rose; lip marked with a large yellow spot, which is faintly striped with orange. *l.* ovate lanceolate, acute. Moulmein, 1867. Stove. SYN. *D. Bullerianum.* (B. M. 5652.)

D. Griffithianum (Griffith's). *fl.* very rich golden yellow, disposed in immense drooping spikes. May and June. East Indies, 1838. Described as one of the most beautiful of the yellow spring-flowering section, not unlike *D. densiflorum*, but about double the size in all its parts. Stove

D. hedyosmum (sweet-scented). A synonym of *D. scabrilingue.*

D. heterocarpum (variable-fruited). A synonym of *D. aureum.*

D. Heyneanum (Heyne's). *fl.* white, streaked with violet, small, produced in spikes, from the top of the stems, at different times of the year. Bombay, 1838. A very pretty stove deciduous species, growing about 8in. high, and best cultivated on a block.

D. infundibulum (funnel-shaped).* *fl.* pure ivory-white, large, often 4in. across, produced in bunches of two or more blossoms, from the upper joints; lip serrated, yellow; the bases of the two lateral sepals prolonged into a tapering funnel-shaped spur, about 1in. long. May and June. Pseudo-bulbs 1ft. to 1½ft. long, ½in. in diameter, bearing ten to fourteen strong leaves. Moulmein, 1863. Stove. It thrives best in a pot nearly filled with draining material, and over this a layer of living sphagnum. See Fig. 636. (B. M. 5446.)

D. Jamesianum (James Veitch's) differs only from *D. infundibulum* in having a red, instead of a golden, throat. Moulmein, 1869. Stove. There are several other forms of these two species, the differences of which lie in the colouring of the lip.

D. Jenkinsii (Jenkins's).* *fl.* pale buff, margined with yellow, on short erect spikes of two or three good-sized blossoms, from the centre of two-year and older pseudo-bulbs. March and April. Pseudo-bulbs small, growing thickly together, 1in. long, ½in. in diameter, bearing a solitary, thick and fleshy, dark green leaf, which is almost 1in. long. Northern India, 1838. A charming little greenhouse evergreen for growing on a bare block of wood. (B. R. 1839, 37.)

D. Jerdonianum (Jerdon's). *fl.* cinnabar-red, small, produced in small bunches from the last matured growth; lip dark purple. Pseudo-bulbs about 6in. high. Nilgherries, 1868. Erect stove evergreen.

D. Johannis (John Veitch's). *fl.* small, fragrant; sepals and petals chocolate-brown; lip yellow, with crimson pencillings. North Australia, 1865. A very pretty greenhouse species, but not so showy as many others. (B. M. 5540.)

D. Kingianum (Capt. King's).* *fl.* violet-purple, small; spikes about 6in. long, springing from the leafy part of two-year and older bulbs. February. Pseudo-bulbs tapering, 6in. high, ½in. in diameter at base, crowded together, usually bearing two leaves. Queensland and New South Wales, 1843. Greenhouse. (B. M. 4527.)

FIG. 636. SINGLE FLOWER OF DENDROBIUM INFUNDIBULUM.

Dendrobium—*continued.*

D. lasioglossum (woolly-tongued). *fl.* somewhat small, produced in twos and threes from the joints; sepals and petals creamy-white; lip yellow in the centre and brown at the sides, streaked with purple lines. Pseudo-bulbs 8in. to 12in. long. Burmah, 1868. An erect slender-growing greenhouse species, but rather difficult to cultivate. (B. M. 5825.)

D. Linawianum (Linaw's).* *fl.* pale rosy-lilac, nearly white in the centre, produced freely in pairs; lip tipped with crimson. Winter. *h.* 1ft. or more. China, 1824. A very handsome erect-growing greenhouse evergreen species, requiring pot culture. (B. R. 1314, B. M. 4153, under name of *D. moniliforme.*) There is a variety *majus*, which has larger and richer-coloured flowers.

FIG. 637. SINGLE FLOWER OF DENDROBIUM LITUIFLORUM.

D. lituiflorum (trumpet-flowered).* *fl.* very much like those of *D. nobile*, but smaller; sepals and petals rosy-purple, very acute; lip white, bordered with purple, having a dark purple centre, and remarkable in being curved like a trumpet, with the mouth upwards. April. Pseudo-bulbs 18in. to 20in. long, ½in. in diameter; node-like joints about 1½in. apart. East Indies, 1856. A rare pendulous stove deciduous species, succeeding best when suspended from the roof in a basket of sphagnum. See Fig. 637. (B. M. 6050.)

D. l. candidum (white). *fl.* pure white, with the faintest tinge of green on the lip. 1880. Very rare.

D. l. Freemanii (Freeman's). A deep-coloured form, with zone of labellum yellow, and erect, short, stiff pseudo-bulbs. Assam, 1878.

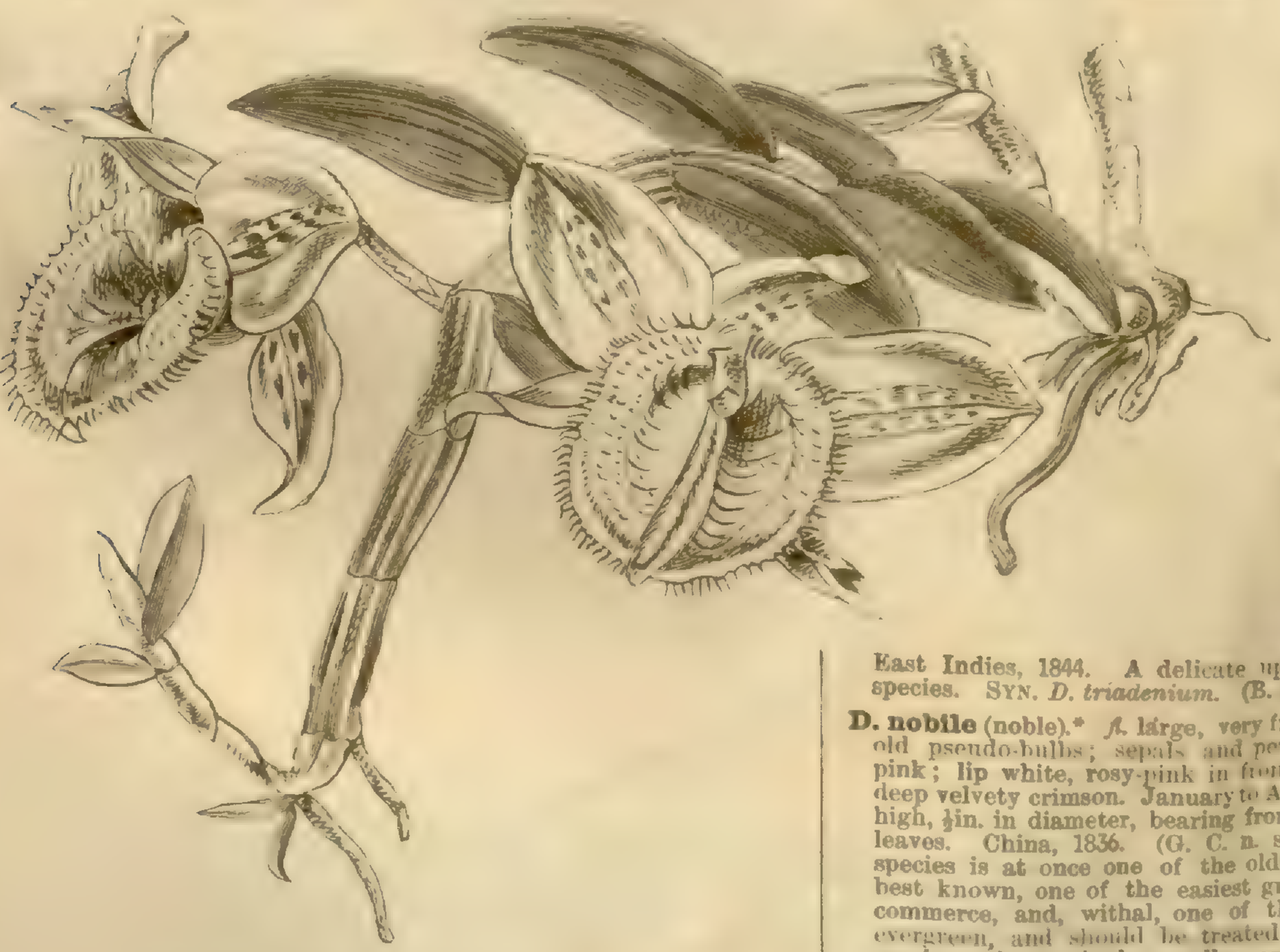

FIG. 638. DENDROBIUM PULCHELLUM.

Dendrobium—*continued.*

D. longicornu majus (large long-spurred).* *fl.* white, fringed, freely produced from the upper part of two-year and older pseudo-bulbs, and from three to six together; lip with a yellow centre. May and June. Pseudo-bulbs 18in. to 20in. high. India. Stove. According to Mr. B. S. Williams, "there are two varieties, but the one now described is the best." Not unlike *D. formosum*, but not so robust in growth. (The type is figured B. R. 1315.)

D. Lowi (Low's). *fl.* bright yellow, with reddish veins on the upper part of the lip, large, 2in. across, produced in racemes from the side of the stem near the top. Summer and autumn. Pseudo-bulbs 1ft. to 1½ft. high, ¼in. in diameter. Borneo, 1862. A very distinct erect stove evergreen species, well-grown plants of which are very rare. It succeeds in a pot or basket, or on a block. (B. M. 5303.)

D. luteolum (yellowish).* *fl.* Primrose-yellow, with a little orange and crimson on the lip, 1in. to 2in. across, produced in threes or fours from the upper part of the last-made pseudo-bulbs and branches. March. Pseudo-bulbs 1ft. to 2½ft. long, ¼in. in diameter. Moulmein, 1864. An erect (or usually so) greenhouse evergreen. The bulbs of some plants of this species throw out many branches, but there is a variety which makes an erect bulb 30in. high. The first-named form never does well unless, each year, the nodes from which these new growths proceed are brought down so that the roots can enter the peat and sphagnum. (B. M. 5441.)

D. MacCarthiæ (Mrs. MacCarthy's).* *fl.* large, nearly 3in. in length, and somewhat more in width, produced in drooping racemes of from three to five blossoms; sepals and petals very pointed, of a rich cerise-blue; lip lighter, sometimes almost white, 3in. long, scoop-shaped, veined with purple, and with a large dark blotch within. June. Pseudo-bulbs 1½ft. to 2ft. long, ½in. in diameter. Ceylon, 1854. This is difficult to manage; it requires a high, moist, airy atmosphere to grow in, and should then be rested for some weeks in an intermediate temperature. It cannot withstand, even when at rest, a lower temperature than 50deg. (B. M. 4886.)

D. macrophyllum (large-leaved).* *fl.* greenish-yellow, hairy outside, produced in long terminal erect racemes; lip three-lobed, striped and spotted with purple. Philippines, 1838. A tall-growing stove species, with club-shaped stems, which bear two or three broad leaves. (B. M. 5649.)

D. marmoratum (marbled). *fl.* white, tipped with purple; lip purplish, ciliated. Burmah, 1875. A very pretty stove species, allied to *D. transparens.*

D. moniliforme (beaded).* *fl.* white, with a few purple spots on the lip, deliciously fragrant, borne on the upper part of the previous year's leafless stems, in clusters of two or more blossoms from a joint. May. Pseudo-bulbs thin, about 10in. high, clothed with grass-like leaves. China and Japan, 1824. Greenhouse. (B. M. 5482, under name of *D. japonicum.*) The *D. moniliforme* of Lindley (B. R. 1314) is *D. Linawianum.*

D. moschatum (musk-scented). *fl.* creamy-white, tinged with rose, large, over 2in. across; lip slipper-shaped, pale yellow, base darker, ornamented on each side with a large eye-like blotch of deep blackish-purple; racemes from the upper part of one-year and older pseudo-bulbs, drooping, eight to fourteen-flowered. June. Pseudo-bulbs 3ft. to 5ft. high, ½in. in diameter; from twenty to thirty large leaves clothe the stem. East India, 1828. A very handsome but much neglected stove species, with an erect, evergreen, strong-growing habit. SYN. *D. cupreum.* (B. R. 1778.)

D. mutabile (changeable). *fl.* white, or pinkish-white, with an orange mark on the lip, produced from the old pseudo-bulbs; spikes compactly eight to twelve-flowered. May. Pseudo-bulbs 4ft. to 6ft. long, frequently branched, and very leafy. East Indies, 1844. A delicate upright-growing stove evergreen species. SYN. *D. triadenium.* (B. M. 5285.)

D. nobile (noble).* *fl.* large, very freely produced from two-year-old pseudo-bulbs; sepals and petals white, tipped with rosy-pink; lip white, rosy-pink in front, blotched at the base with deep velvety crimson. January to April. Pseudo-bulbs 2ft. to 3ft. high, ½in. in diameter, bearing from ten to sixteen bright green leaves. China, 1836. (G. C. n. s., xi. 564.) This greenhouse species is at once one of the oldest in cultivation, one of the best known, one of the easiest grown, one of the cheapest in commerce, and, withal, one of the most beautiful. It is an evergreen, and should be treated with pot culture if a large specimen is required; smaller examples may be grown in a basket. When growth is complete, remove it to a cool house,

FIG. 639. DENDROBIUM SUPERBIENS, showing entire Plant and detached portion of Pseudo-bulb with Spike.

Dendrobium—*continued.*

and keep it dry, or with just sufficient moisture to preserve its pseudo-bulbs from shrivelling. It usually flowers during spring and early summer; if required to blossom in winter, it should be placed in the stove during the autumn months. This is one of the species which vary their scent at different times of the day. According to M. André, the blossoms have an odour of grass in the morning, of honey at noon, and a faint Primrose scent in the evening. There are several varieties, including the following:

D. n. intermedium (intermediate). *fl.*, sepals and petals white; lip white, with a crimson spot in the centre. A rare, but distinct and desirable form.

D. n. pendulum (pendulous). *fl.* large, richer in colour than the type; with a pendulous habit.

Other varieties are: *cærulescens, nobilius* (a very splendid form), and *Wallichianum.*

D. nodatum (noded). A synonym of *D. Aphrodite.*

D. ochreatum (yellowish). *fl.* produced on the young growth, about 2in. across, very thick in substance; sepals and petals bright orange; lip with a crimson blotch in the centre. Pseudo-bulbs 8in. to 10in. long, nearly 1in. in diameter. Northern India, 1837. A very handsome pendulous stove deciduous plant. SYN. *D. Cambridgeanum.* (B. M. 4450.)

D. Parishii (Parish's).* *fl.* purplish-rose, fading into white towards the centre, generally twin; lip shorter than the sepals and petals, very woolly, rose-coloured, with two eye-like purple blotches in front of the column. June. Pseudo-bulbs enveloped in a tissue-paper-like epidermis, 8in. to 14in. long, ½in. in diameter. Moulmein, 1863. A beautiful semi-erect stove deciduous species, allied to *D. nobile*, but quite distinct. (B. M. 5488.)

D. Paxtoni (Paxton's). A synonym of *D. fimbriatum oculatum.*

D. Pierardii (Pierard's).* *fl.* creamy-white or delicate pink, produced on long, beautifully festooned stems; lip Primrose-colour, with a few purple lines near the base. Winter. Pseudo-bulbs 2ft. to 4ft. long, ½in. in diameter. East Indies, 1815. A pendulous greenhouse deciduous species, best grown in a basket or on a block. (B. M. 2584.) There are several varieties, some of which are very inferior. One of the best is *D. P. latifolium*, in which the flowers are much finer than those of the type, and are rather more freely produced. It is rare. India, 1830.

D. primulinum (Primrose).* *fl.* produced in two rows along the stem; sepals and petals small, pinkish-white; lip downy, very large, shell-shaped, white, with a very faint tint of blue. February and March. Pseudo-bulbs 1ft. to 1½ft. long, ½in. in diameter. Moulmein, 1864. A rare but handsome greenhouse deciduous species, with a pendulous habit. (B. M. 5003.)

D. pulchellum (beautiful).* *fl.* freely produced from the last matured growth; sepals and petals pinkish-white; lip rose, with an orange base; margin beautifully fringed or ciliated. March. Pseudo-bulbs branched, 6in. to 10in. long. North India. A dwarf stove deciduous species, requiring to be grown in a basket, and, when at rest, to be kept cool. See Fig. 638. (B. M. 5037.)

D. rhodocentrum (red-spurred). *fl.* light rosy, produced from the upper portions of the two-year and older pseudo-bulbs, and disposed in hanging bunches of from six to twelve; petals tipped with purple; lip white, with a purplish stain at the apex, and a yellowish base. Autumn. Pseudo-bulbs 2ft. to 3ft. long, ¼in. in diameter. 1872. A pendulous stove evergreen species.

D. rhodopterygium (rose-winged). *fl.* deep rose; lip light purple, woolly, pouched. May. Pseudo-bulbs 1ft. to 1½ft. high, ½in. in diameter. Burmah, 1875. An erect deciduous stove species, resembling *D. Parishii*, but with much larger pseudo-bulbs.

D. Ruckeri (Rucker's). *fl.* greenish-yellow, almost white externally, fragrant; lip with brown marking. Philippines, 1843. A pretty species, similar in habit to *D. aureum.*

D. sanguinolentum (blood-stained).* *fl.* produced in bunches of six or eight, from the upper parts of the old pseudo-bulbs; sepals and petals amber, veined with rose, and with purple tips; lip large, with its point heavily marked with purple. Autumn. Pseudo-bulbs 3ft. to 4ft. high, ¼in. in diameter, thickly clothed with large dark green leaves. Ceylon, 1842. An erect stove evergreen species, with violet or lilac-coloured stems and leaves. (B. R. 1843, 6.) Mr. Williams mentions a variety named *superbum*, which he describes as a great improvement upon the typical form; it is much stronger in growth, with longer spikes and larger flowers. Borneo.

D. scabrilingue (rough-tongued).* *fl.* at first greenish, but soon changing to pure white, except the lip, which is shaded with green and yellow, and striped with orange; rather small, produced in pairs, and yielding a very delicious Wallflower-like perfume. Spring. Pseudo-bulbs 6in. to 10in. long, and about ¼in. in diameter. Burmah, 1862. An erect stove evergreen species. SYN. *D. hedyosmum.* (B. M. 5515.)

D. sculptum (carved). *fl.* pure white, about 2in. across, produced from the top of the matured growth, three or four on a spike; lip white, a square orange blotch on its centre. Pseudo-bulbs 1ft. to 1½ft. long, ½in. thick. Borneo. An erect stove evergreen species.

Dendrobium—*continued.*

D. secundum (side-flowering). *fl.* purple, with a yellow lip, small, disposed in short, dense racemes, which are produced from near the top of the two-year and older pseudo-bulbs. Winter. Pseudo-bulbs 2ft. to 3ft. high, ½in. in diameter, bearing short broad leaves. Malayan Islands, 1829. Erect stove evergreen. (B. M. 4352.)

D. senile (white-haired). *fl.* bright golden-yellow, about 1in. across, in short spikes of twos or threes from the sides of the last matured growth; lip with a few reddish transverse stripes. Spring. Pseudo-bulbs 4in. to 6in. long, ½in. in diameter. Moulmein, 1865. (B. M. 5520.) A rare but pretty erect stove deciduous species, having the stems and leaves densely clothed with long white hairs. This plant should be grown upon a block of wood, and kept surrounded with a genial atmosphere; but it does not enjoy overhead syringing.

D. speciosum (showy).* *fl.* wax-like, creamy or yellowish-white, fragrant, small, but numerously disposed in a long terminal raceme (from 1ft. to 1½ft. in length), curiously resupinate or inverted, the lip appearing at the upper part of the flower; sepals and petals incurved, narrow; lip with black specks. Autumn. Pseudo-bulbs very stout, 6in. to 10in. long, 1½in. in diameter, crowned with two or three large coriaceous dark shining leaves. Eastern Australia, 1824. An erect greenhouse evergreen species, extremely easy to manage. When making its young growths, little heat is necessary; but when these are mature, it should be removed to the open air for two or three months, giving only sufficient water to keep the sun from shrivelling it up. It should be grown in a pot, and a little loam and leaf mould may be added to the compost with considerable advantage. (B. M. 3074.)

D. s. Hillii (Hill's). *fl.*, sepals and petals narrower and paler, and with longer but more slender spikes than those of the type. Pseudo-bulbs about double the length, and half the thickness, of those of *D. speciosum.* 1861. A remarkably floriferous plant. (B. M. 5261.)

D. suavissimum (very sweet-scented).* *fl.* rich yellow, about 2½in. across, with a strong Hawthorn-like fragrance, produced in erect spikes of eight to twelve, from the leafy part of one-year and older pseudo-bulbs; lip the same colour, with a conspicuous central blotch of brownish-purple; outer edge very delicately fringed. June. Burmah, 1873. Habit of growth the same as *D. chrysotoxum.* Stove. (Gn., Feb. 23, 1878.)

D. sulcatum (furrowed). *fl.* in a drooping raceme from the leafy joints; sepals and petals amber, with crimson veins; lip amber, with deep crimson markings. February. Pseudo-bulbs 6in. to 9in. high, swelling upwards, bearing two or three large leaves in the upper part. India, 1837. An erect stove evergreen species. (B. R. 1833, 65.)

D. superbiens (superb).* *fl.* usually light purple, but sometimes claret, shaded with brown, about 2in. across; spikes erect or arching, bearing from eight to twelve flowers, and produced from the upper part of the pseudo-bulbs; sepals and petals undulated or waved. Autumn. Pseudo-bulbs 1ft. to 3ft. high, 1in. in diameter. North Australia, 1876. An erect stove evergreen species. See Fig. 639. (Gn., Sept. 14, 1878.)

D. s. Goldiei (Goldie's). A very elegant form, with violet-coloured flowers. North Australia, 1878.

D. superbum (superb). *fl.* pink, tinged with rose, about 3in. or 4in. across, proceeding in a row on each side of the stems; lip rich purple. April. Pseudo-bulbs 1½ft. to 2½ft. long, ½in. in diameter. Philippines. A pendulous stove semi-deciduous species, with flowers having a strong odour, like Turkish rhubarb; this objection will be unnoticed if the plant is grown in a basket suspended from the roof. (B. M. 3970, under the name of *D. macranthum.*)

D. s. anosmum (scentless).* *fl.* large, from 2in. to 3in. across, produced in pairs down the stem; sepals and petals rosy-pink; lip purple. Spring. Pseudo-bulbs 1ft. to 2ft. long, and about ½in. in diameter. Manilla, 1840. A drooping stove deciduous species, best grown in a basket. Reichenbach considers this a variety of *D. superbum*, but the petals and sepals are broader, and the flowers are better-shaped and have no rhubarb scent. (P. M. B. xv. 97.)

D. s. giganteum (gigantic). *fl.* from 5in. to 7in. across; sepals and petals rose-purple; lip same colour, fringed and marked at the base with two purplish-red spots. Pseudo-bulbs much shorter and thicker than in the type. Manilla.

D. s. Huttonii (Hutton's). *fl.*, sepals and petals pure white; lip downy, brilliant purple on the inside. This splendid, but rare, variety is almost entirely without the rhubarb scent of the type. Malay Archipelago. There are two or three other varieties.

D. Tattonianum (Tatton's). A synonym of *D. canaliculatum.*

D. taurinum (bull-headed). *fl.*, sepals yellowish-green; petals deep purple, long, curling, and spread out like the horns of a bull (whence the specific name); lip white, margined with purplish-violet. Autumn. *h.* 5ft. Manilla, 1837. A strong-growing stove evergreen species, with upright stems; it is best grown in a pot. (B. R. 1843, 28.)

D. teretifolium (terete-leaved). *fl.* white, numerously produced in short bunches from the base of the pseudo-bulb; lip with black specks. October. Pseudo-bulbs small, much jointed, branching, bearing at their points a solitary terete pendulous

Dendrobium—*continued.*

leaf, which is 9in. long by ¼in. in diameter. North-east Australia, 1823. A pendulous stove evergreen species. (B. M. 4711.)

D. thyrsiflorum (stalk-flowered). A synonym of *D. densiflorum albo-luteum.*

D. tortile (twisted). *fl.* pale yellow, almost white, suffused with purplish-rose; sepals and petals long, slightly twisted. June. Pseudo-bulbs 1ft. to 1½ft. high, ¾in. in diameter. Moulmein, 1847. An erect stove evergreen species, flowering in the same manner as *D. nobile.* (B. M. 4477.) The variety *roseum* is extremely pretty, having flowers of a delicate rose, shaded with yellow. It resembles the type in every other respect.

D. transparens (transparent).* *fl.* transparent white, tinged with purplish-rose towards the tips, 1in. to 1½in. across, produced in pairs along the stems; lip stained in the middle with a blotch of deep crimson encircled by a yellow zone. March. Pseudo-bulbs 1ft. to 1½ft. high. Assam, &c. An elegant, slender, erect stove deciduous plant. (B. M. 4663.)

D. triadenium (three-gland-lipped). A synonym of *D. mutabile.*

D. Wardianum (Ward's).* *fl.* about 3½in. in diameter, thirty to forty to a pseudo-bulb; sepals and petals white, upper portion bright rich magenta, broad, thick, wavy, blunt at the tips; lip large, white above, rich orange in the lower part, with two deep eye-like spots of crimson-magenta. May. Pseudo-bulbs 2ft. to 4ft. long, 1in. in diameter; nodes about 1½in. apart. Assam, 1863. A splendid stove deciduous species, requiring to be cultivated in a basket or upon a block of wood, as its stems are long and pendulous, the joints much swollen. During the growing season, it enjoys an abundant supply of water, with a good heat; but, when the growths are complete, the plant should be removed to a cooler atmosphere, and less water, as a matter of course, will suffice. The two following varieties are both rare and very desirable: *candidum* (=*album*) sepals and petals pure white; lip the same, but with an orange-coloured base. (F. M. n. s. 212.) *Lowii*, flowers white, rose, purple-brown.

D. Williamsonii (Williamson's). *fl.* ivory-white, slightly tinged with brown; lip large, with a blood-red spot. Stems erect, bearing strap-shaped leaves, clothed with short soft hairs. Assam, 1869. Stove plant, somewhat difficult to cultivate.

D. xanthophlebium (yellow-veined).* *fl.* produced in pairs upon the last matured and older pseudo-bulbs; sepals and petals white; lip medium-sized, spotted with orange; margin white. Pseudo-bulbs very small. *h.* 1ft. Moulmein, 1864. Stove.

HYBRIDS. The hybrid forms, although not numerous, are well worth cultivating. Unlike those of many other genera, they do not materially outdistance their progenitors in either form, colour, beauty, or other respect. Those mentioned below are fairly representative:

D. Ainsworthii (Ainsworth's).* *fl.* about 3in. across, with a strong, Violet-like perfume; sepals and petals white, with a slight tinge of rose; lip white, with a large central blotch of claret-colour. February and March. Pseudo-bulbs 1ft. to 2½ft. long, about ½in. in diameter. A strong, erect, stiff-growing stove plant, the foliage of which is retained on each pseudo-bulb for two years. Obtained from *D. heterocarpum* and *D. nobile.* (G. C. n. s., viii. 166.)

D. Dominyanum (Dominy's). *fl.* rose-coloured, very pretty, produced upon two-year old bulbs. Spring. A very pretty hybrid between *D. nobile* and *D. Linawianum*, with habit and growth of the former. It is interesting from being the result of one of Mr. Dominy's first efforts in hybridising orchids. Stove.

D. endocharis (side-flowering).* *fl.* produced from the sides of the two-year old pseudo-bulbs; sepals and petals nearly pure white; lip the same, but with brown lines. January. Pseudo-bulbs 1ft. long, ½in. in diameter. A very handsome stove plant, the result of a cross between *D. heterocarpum* and *D. moniliforme.*

D. Leechianum (Leech's).* *fl.*, sepals and petals white, tipped with rose-purple; lip margined with white; centre a large dark purple blotch. Hybrid between *D. aureum* and *D. nobile.* Greenhouse. (Gn., July 7, 1883.)

D. rhodostoma (red-mouthed). *fl.* three or four together in a pendulous bunch, which is produced from the upper parts of one-year and older pseudo-bulbs; sepals and petals deep rose; lip large, well expanded, rosy-purple, with deep purple markings. Autumn. Pseudo-bulbs 2ft. to 2½ft. high, ¼in. in diameter. A very handsome Veitchian hybrid between *D. Huttonii* and *D. sanguinolentum.* Stove.

D. splendidissimum (very splendid). *fl.*, sepals and petals cream-coloured, tipped with purple; lip yellowish, with a blackish-purple disk. A fine hybrid between *D. aureum*, and *D. nobile* or *D. macrophyllum.* Stove.

DENDROCHILUM (from *dendron*, a tree, and *cheilos*, a lip; in allusion to the plant having lipped flowers and growing as an epiphyte on trees). ORD. *Orchideæ.* A small genus of two or three species of stove orchids, with long pendulous racemes of rather inconspicuous yellowish flowers, and narrow, one-leaved pseudo-bulbs. The two species which have been in cultivation are *D. aurantiacum* and *D. pallidiflavens.*

Dendrochilum—*continued.*

D. Cobbianum. *See* **Platyclinis Cobbiana.**
D. filiforme. *See* **Platyclinis filiformis.**
D. glumaceum. *See* **Platyclinis glumacea.**

DENDROCOLLA. A synonym of **Sarcochilus.**

DENDROMECON (from *dendron*, a tree, and *mekon*, a Poppy). ORD. *Papaveraceæ.* A hardy shrubby plant, thriving in a light rich loam. Increased from cuttings.

D. rigida (stiff).* Tree Poppy. *fl.* yellow; sepals two, ovate, caducous; petals four; stamens numerous. June. *l.* rigid, entire. California. The common name is very appropriate, the plant having the appearance and character of the Poppy tribe, together with a woody stem and branches. (B. M. 5134.)

DENDROPANAX (from *dendron*, a tree, and *Panax*; Tree Panax). ORD. *Araliaceæ.* Very handsome and effective stove foliage plants. There are about twenty species, natives of tropical Asia and America, as well as China and Japan; but the one given below is the only one in general cultivation. For culture, *see* **Panax.**

D. argenteus (silvery-leaved). *l.* alternate, oblong, entire, about 1ft. in length, tapering at the base, pointed or rounded at the apex; upper surface silvery-white; veins greenish; lower surface purplish; leafstalks long, stout. Stem somewhat fleshy, spotted. Brazil, 1878.

DENDROSERIS (from *dendron*, a tree, and *seris*, a kind of endive; referring to its habit and form of leaves). ORD. *Compositæ.* Handsome greenhouse trees, thriving in a rich loam. There are seven species, all natives of Juan Fernandez, but probably the only one hitherto introduced is that described below. Propagated by seeds. It is, however, usually cultivated from imported plants.

D. macrophylla (large-leaved). *fl.-heads* deep orange. Summer. Stem usually simple, surmounted by a crown of leaves and a drooping panicle of large flowers. *h.* 10ft. 1877. (B. M. 6353.)

DENHAMIA. *See* **Culcasia.**

DENTARIA (from *dens*, a tooth; referring to the fanged roots). Toothwort. ORD. *Cruciferæ.* A genus of very ornamental hardy herbaceous perennials. Radical leaves none or few, on long stalks; cauline ones stalked, placed on the middle of the stem, alternate or in whorls, palmately or pinnately cut. Stem erect, bearing the raceme at the top; pedicels filiform, bractless. Rootstocks creeping, scaly. They are of very simple culture in a rich, light soil, and a moist, shaded situation. Propagated by carefully-made divisions of the root; or by seed. There are about twenty species, all confined to North temperate regions.

D. bulbifera (bulb-bearing). *fl.* purple, few, rather large. April. *l.*, cauline ones alternate, pinnate; upper ones undivided, or with few segments, for the most part bearing bulbs in the axils. *h.* 1½ft. to 2ft. Europe (England). (Sy. En. B. 107.)

D. digitata (digitate).* *fl.* rich purple. May. *l.*, cauline ones many, alternate, stalked, palmately cut into five oblong-lanceolate, pointed, grossly serrated segments. *h.* 1½ft. South Europe, 1659. (L. B. C. 757.)

D. diphylla (two-leaved).* *fl.* white on the inside, purple on the outside. May. *l.*, cauline ones two, alternate, on short stalks, cut into three ovate-lanceolate, grossly and unequally serrate-lobed segments. *h.* 6in. to 1ft. North America, 1810. (B. M. 1465.)

D. glandulosa (glandular). *fl.* purplish. May. *l.* three in a whorl, stalked, ternate; segments oval-lanceolate, acuminated, serrated, bearing glands in the axils. *h.* 1ft. Hungary, 1815.

D. laciniata (jagged). *fl.* rose-coloured, or almost white, large. April. *l.* three in a whorl, on short stalks, three-parted; lobes or segments linear, entire, or deeply serrated or jagged. *h.* 1ft. North America, 1823.

D. pinnata (pinnate). *fl.* white, or pale purple, large. May. *l.*, cauline ones alternate, stalked, pinnate; segments oblong, acuminated, serrate-toothed. *h.* 1ft. Switzerland, &c., 1683. (R. G. 623.)

D. polyphylla (many-leaved).* *fl.* cream-coloured, large. May. *l.* three in a whorl, or alternate, stalked, pinnate; segments seven or nine, approximate, lanceolate, acuminated, serrated. *h.* 1ft. Hungary, 1817. (R. G. 171.)

D. tenella (slender). *fl.* purple, about the size of those of *Cardamine pratensis.* April. *l.* two, alternate, sessile, cut into three linear-elliptical entire segments. *h.* 9in. North America, 1826.

DENTATE. Having the margin divided into incisions resembling teeth.

DENTICULATE. Having the margins finely and slightly toothed.

DENTIDIA. A synonym of **Perilla.**

DENUDATE. A hairy or downy surface becoming naked.

DEODAR CEDAR. *See* **Cedrus Deodara.**

DEPARIA (from *depas*, a cup; referring to the form of the involucre). Including *Cionidium* and *Trichocarpa*. ORD. *Filices*. A small genus of rare stove ferns. Involucre shallowly cup-shaped, membranaceous, not two-valved. Sori protruding from the margin of the frond. For general culture, *see* **Ferns.**

D. concinna (neat).* *fronds* bipinnate; lower pinnæ more than 1ft. long, nearly 2in. broad, deeply cut in the lower part only; lobes blunt, entire, broadly oblong-rhomboidal, unequal-sided and decurrent downwards. *sori* two to six to a lobe. Peru. SYN. *D. Matthewsii.*

D. Macræi (Macray's). A synonym of *D. prolifera.*

D. Matthewsii (Matthews'). A synonym of *D. concinna.*

D. Moorei (Moore's). *fronds* 1ft. to 1½ft. long, 6in. to 9in. broad, cordate-deltoid in general outline, pinnate below; lower pinnæ 6in. to 9in. long, 4in. to 6in. broad, cut down to the rachis into deeply-pinnatifid lobes. *sori* copious, extra marginal, or stipitate. New Caledonia.

D. nephrodioides (Nephrodium-like). *fronds* 2ft. to 3ft. long, rather firm and shining, quadripinnate; lower pinnæ stalked, under 1ft. long; pinnules deltoid, with inciso-pinnatifid lobes, 4in. long; upper ones gradually smaller, confluent and toothed only. *sori* marginal and prominent, but sessile, globose. New South Wales.

D. prolifera (proliferous).* *fronds* pinnate; lower pinnæ about 6in. long, 1in. to 1½in. broad, pinnatifid; lobes oblong, slightly toothed. *sori* four to twelve to a lobe, extra marginal, sessile or stipitate. Sandwich Islands. SYN. *D. Macræi.*

DEPAUPERATED. Imperfectly developed.

DEPENDENT. Hanging down.

DEPPEA (named in honour of M. Deppe, who collected and sent home many plants from Mexico). SYN. *Choristes.* ORD. *Rubiaceæ.* A genus containing about twelve species of shrubs, all natives of Mexico. Flowers yellow, small, arranged in cymes; corolla rotate, or shortly funnel-shaped. Leaves opposite, petiolate, membranaceous, ovate or lanceolate. *D. erythrorhiza* is a shrubby greenhouse plant, with a woody root and reddish inner bark. For culture, *see* **Bouvardia.**

D. erythrorhiza (red-rooted).* *fl.* yellow; cymes terminal and axillary, pedunculate, of three or four branches. *l.* petiolate, elliptic, acuminated at both ends, rather pilose above and on the margins; stipules triangular, deciduous. *h.* 1ft. to 3ft.

DEPRESSARIA CICUTELLA. *See* **Flat-body Moth.**

DEPRESSARIA DAUCELLA. *See* **Carrot Blossom Moth.**

DEPRESSARIA DEPRESSELLA. *See* **Purple Carrot-seed Moth.**

DEPRESSED. Pressed down; having the appearance of being pressed.

DESCANTARIA. Included under **Tradescantia.**

FIG. 640. LEAF OF DESFONTAINEA SPINOSA.

DESFONTAINEA (named after R. L. Desfontaines, a celebrated French botanist, born 1752, died 1833). ORD. *Loganiaceæ.* A very beautiful, hardy, evergreen shrub, of easy cultivation. It thrives in either a peat or loam soil, but preferably the latter. Cuttings will root if inserted in either of the soils above named, with the addition of a little sand; a gentle heat would accelerate the rooting. It forms an admirable plant for greenhouse or conservatory decoration, and even when out of flower its peculiar Holly-like appearance is most attractive.

D. spinosa (spinose). *fl.* showy, terminal, solitary, pedunculate; corolla scarlet, with a yellow limb, tubular. August. *l.* elliptic-oblong, coriaceous, glabrous, shining above, cuneated, and quite entire at the base, with spiny-toothed margins. *h.* 3ft. Andes from Chili to New Grenada, 1853. See Fig. 640. (B. M. 4781.)

DESIGNS. The art of taking plans or Designs of objects should, according to Loudon, be considered as part of a gardener's general education, since none who aspire to any degree of eminence in their profession, ought to be ignorant of the first principles of geometry and drawing. A Design of the whole or any part of a garden, as, for instance, a flower-bed, intended as a working plan, should, above all things, be accurately drawn. It is impossible to correctly transfer an intricate Design from paper to show itself in a given space on the ground, unless the boundary of that space has been previously measured, and it, with all the arrangements of the enclosure, carefully prepared on an equal scale throughout. In the case of a garden, the full size being known, and the scale determined (as large a one as practicable being preferred), the positions of any permanent features of the inside, such as large trees, glass structures, &c., either those already existing, or others contemplated, should be marked, and the scale attached to the Design for reference. A plan of a flower-garden or carpet-bed should have the same rule of drawing to scale measurement applied, as the position and space to be occupied by different plants can be previously arranged, and the proportion of colours properly inserted. A glance at this, when bedding time comes, will at once indicate the positions assigned to all the plants, and so prevent much confusion that would otherwise prevail. Intricate carpet-bedding Designs are often worked out by marking the lines with white sand; others may be shown with stakes or small pegs. Designs for glass structures vary according to the requirements of the plants for which they are intended; but each should show, in the same proportion, all the working details it is proposed to introduce.

DESMANTHUS (from *desme*, a bundle, and *anthos*, a flower; the flowers are collected into bundles or spikes). ORD. *Leguminosæ.* A genus of stove perennial suffruticose herbs or shrubs, all the species of which belong to the New World, except one, which occurs everywhere in tropical regions. Flowers all hermaphrodite; calyx campanulate, shortly dentate; petals free, or slightly cohering, valvate. Leaves bipinnate; leaflets small; stipules setaceous, persistent. There are about eight species, one or two of which have been successfully cultivated in this country. In their native habitats, all are more or less ornamental.

DESMOCHÆTA. Included under **Pupalia** (which *see*).

DESMODIUM (from *desmos*, a band; in reference to the stamens being connected). ORD. *Leguminosæ.* A genus containing about 125 species of suffruticose herbs or sub-shrubs, found in all warm parts of the globe. The genera *Catenaria*, *Dendrolobium*, *Dicerma*, *Dollinera*, *Heteroloma*, *Phyllodium*, and *Pteroloma*, are included by Bentham and Hooker under *Desmodium.* Flowers purple, blue, rose, or white, in usually loose terminal racemes. Leaves pinnately-trifoliolate; stipels two at the base of the terminal leaflet, and one at the base of each lateral leaflet. Stove and greenhouse plants, except where otherwise stated. For culture, *see* **Cnestis.**

D. alatum (winged). A synonym of *D. triquetrum.*

D. biarticulatum (two-jointed). *fl.* yellow, disposed in an almost naked terminal raceme. July. *l.* trifoliate; leaflets about equal

Desmodium—*continued.*

in size, rising from the top of the petiole, obovate-oblong, obtuse. *h.* 2ft. East Indies, 1808.

D. canadense (Canadian).* *fl.* reddish-purple, in simple, or panicled, lateral or terminal racemes. July. *l.* pinnately-trifoliate; leaflets oblong-lanceolate, smoothish. Stems erect, rather pilose and striated. *h.* 4ft. to 6ft. North America, 1640. Hardy. (B. M. 3553.)

D. gyrans (moving).* Moving or Telegraph Plant. *fl.* violet; racemes numerous, disposed in a panicle. July. *l.* pinnately-trifoliate; leaflets elliptic-oblong, terminal one very large, and lateral ones very small. *h.* 1ft. to 3ft. East Indies, 1775. A very singular plant, the lateral leaflets moving up and down, either steadily or by jerks, the movements being most marked during bright sunshine.

D. nutans (nodding). *fl.* bluish-lilac, twin; racemes compound, terminal and axillary, and are, as well as the branches, pendulous. July. *l.* pendulous, pinnately-trifoliate; leaflets roundish-rhomboid, tomentose on both surfaces. *h.* 1ft. to 3ft. East Indies, 1823. (B. M. 2867.)

D. penduliflorum. A synonym of *Lespedeza bicolor.*

D. podocarpum (foot-fruited). *fl.* purple; racemes terminal, elongated, slender. July. *l.* pinnately-trifoliate; leaflets broad-ovate, rather rhomboid, pale beneath. Stem ascending, terete. *h.* 1ft. to 2ft. Nepaul.

D. pulchellum (pretty). *fl.* purple, two to each pair of floral leaves, which are bifoliate. July. *l.* pinnately-trifoliate; leaflets elliptic-oblong, pubescent beneath. *h.* 2ft. to 3ft. East Indies, 1798.

D. Skinneri albo-nitens (Skinner's shining white).* A variety having purple flowers and leaves lined with white. It is a pretty climber, and is very effective trained along the rafters of the stove. SYN. *Rhynchosia albo-nitens.* (B. M. 5452.)

D. triquetrum (triquetrous). *fl.* purple. July. *l.*, leaflets lanceolate, acuminated, eight times longer than the petioles. *h.* 3ft. to 6ft. East Indies, 1817. SYN. *D. alatum.*

DESMONCUS (from *desmos*, a band, and *ogkos*, a hook; the ribs of the leaves ending in recurved hook-like points). ORD. *Palmæ.* Very ornamental stove palms. Flowers appearing in the axils of the leaves, on a branched spike. Leaves pinnate, prickly. Stem long, slender, ascending. The few species in cultivation, when in a young state, make rather handsome plants for table decoration; when too large for this purpose, a pillar or rafter of the stove should be devoted to them, where their peculiar leaves will be displayed to advantage, and in such a position afford a pleasing shade. For culture, *see* **Calamus.**

D. granatensis (New Grenadan).* *l.*, petioles terete and spineless, except at the top, where they bear a few setæ, and where are also seated a pair of lanceolate divergent pinnæ, nearly 2in. broad, and of a lively green colour. Columbia, 1875.

D. major (greater). *l.*, segments about twenty pairs, linear, acuminate; rachis prickly, covered with a blackish, deciduous tomentum; spathe covered with brown prickles. Stem reed-like, climbing, prickly. Trinidad.

D. minor (less)* may be likened to a miniature *D. major.* All its parts are considerably smaller. West Indies.

DEUTZIA (named in honour of Johann Deutz, Dutch naturalist, a friend and patron of Thunberg's). ORD. *Saxifrageæ.* Very ornamental, pubescent or scabrous, hardy deciduous shrubs. Flowers white, axillary, or disposed in axillary and terminal corymbs. Leaves opposite, petiolate, ovate, acuminated, serrated, wrinkled and veined, scabrous from stellate hairs. Branches purplish and villous. Some of the Deutzias are amongst the hardiest of dwarf white-flowering shrubs; and, as they are also well adapted for growing in a cool-house, or for forcing, they are extremely useful. If cultivated in a temperature from 45deg. to 50deg., they develop both foliage and flowers, in which condition they are, of course, far preferable. A compost of loam, enriched with thoroughly decayed cow manure, with the addition of coarse sand, suits them well. The plants will require repotting every year, after flowering, and then plunging in a bed of coal ashes. Attention must be paid to thinning the shoots, in such a manner that an equal growth is maintained throughout the plant, so that it shall have a somewhat globular form. *D. gracilis* is the species most grown for forcing, for which purpose it can hardly be superseded; it forms a beautiful plant when so treated. Deutzias will not succeed if forced two years in succession, but will do so when only gradually brought on earlier in the spring. It is a good plan to

Deutzia—*continued.*

place them in the open ground, in summer, and have two batches of plants, so that one may be forced while the other is left in the open ground, to succeed it the following year. Deutzias lift well in autumn, and should be potted and placed in cold frames, in October, to be gradually brought on as required. The stronger-growing sorts succeed in almost any soil or position in the shrubbery border.

D. corymbosa (corymbose).* *fl.* white; panicles corymbose, trichotomous; panicle and outside of calyx dotted. *l.* oblong or elliptic lanceolate. *h.* 5ft. Himalayas.

FIG. 641. FLOWERING BRANCH AND SINGLE FLOWER OF DEUTZIA CRENATA FLORE-PLENO.

D. crenata (crenate).* *fl.* white, racemose or paniculate. *l.* ovate-lanceolate, rigidly serrulate, rough to the touch. Stems slender. *h.* 4ft. to 8ft. Japan. A very handsome shrub. SYNS. *D. Fortunei* and *D. scabra*, of gardens. (B. R. 1718, under the name of *D. scabra.*) The varieties *flore pleno* (see Fig. 641) and *purpurea plena* have double-white and pink-tinted flowers respectively.

FIG. 642. FLOWERING SPRAY OF DEUTZIA GRACILIS.

D. Fortunei (Fortune's). A synonym of *D. crenata.*

D. gracilis (slender).* *fl.* white, numerously disposed in terminal racemes. April. *l.* small, ovate, acuminate, serrated. *h.* 1ft. to 2ft. Japan. See Fig. 642.

D. scabra (rough). A synonym of *D. crenata.*

D. staminea (conspicuous-stamened). *fl.* white, sweet-scented; petals oblong, indupliate-valvate; corymbs many-flowered; calyx tube hoary-tomentose with stellate hairs; teeth short, triangular. May and June. *l.* 1in. to 2in. long, oblong, or elliptic-lanceolate, grey tomentose beneath with stellate hairs. *h.* 3ft. Himalayas, 1841. Deciduous. (B. R. 1847, 13.)

DEVIL-IN-THE-BUSH. *See* **Nigella.**

DEVIL'S APPLES. *See* **Mandragora officinalis.**

DEVIL'S BIT. *See* **Scabiosa Succisa.**

DEVIL'S COACH HORSE. *See* **Beetles.**

DEVIL'S FIG. *See* **Argemone mexicana.**

DEVIL'S LEAF. *See* **Urtica urentissima.**

DEWBERRY. *See* **Rubus fruticosa cæsius.**

DIACALPE (from *dia*, through, and *calpis*, an urn; referring to the disposition of the spore-cases). ORD. *Filices*. A monotypic genus. Involucre inferior, globose, hard-membranaceous, entire, at length bursting very irregularly at the summit. Capsules numerous, nearly sessile. Sori globose; the receptacle small, scarcely elevated. For culture, *see* **Ferns.**

D. aspidioides (Aspidium-like). *fronds* tripinnate, sub-membranaceous, often deciduously crinite; pinnules oblong-cuneate, lobed, more or less decurrent. Malay Islands, &c. Stove.

DIADELPHOUS. Applied to the stamens when they are connected into two bundles.

DIANDROUS. Having two stamens.

DIANELLA (a diminutive of *Diana*, the sylvan goddess; in reference to the plants growing in woods). SYN. *Rhuacophila*. ORD. *Liliaceæ*. Very ornamental fibrous-rooted half-hardy perennials. Flowers paniculate, on drooping pedicels; perianth six-cleft. Leaves grass-like. The species thrive, in sheltered spots in the southern counties, in a mixture of loam and peat. All succeed well planted out in the cool conservatory. Increased readily by divisions; or by seeds, sown in gentle heat, in spring.

D. cærulea (sky-blue). *fl.* blue; branches of panicle short. May. *l.*, stem ones long, numerous, ensiform, rough at the edge and keel. *h.* 2ft. New South Wales. (B. M. 505.)

D. intermedia (intermediate). *fl.* whitish, numerous, disposed in much-branched panicles 10in. to 18in. long. *l.* linear, ensiform. New Zealand. A free-growing species, producing bunches of pretty dark blue berries.

D. lævis (smooth).* *fl.* bluish, in loose racemes; pedicels filiform, solitary, upright, distant, erecto-patent, scattered; corolla reflexed, inner segments ruled down the middle with three deeply-coloured lines, parallel with the axis of the segment; outer with five similar ones; filaments bent at the top, and connected by a joint with a short, thick, orange-coloured, irregularly oblong strumous body, on the inwardly shelving summit of which the anther is fixed by its base. Spring. *l.* bright green, ensiform, broad, smooth, and keeled. *h.* 2ft. New South Wales, 1822. SYN. *D. strumosa*. (B. R. 751.)

D. strumosa (strumous). A synonym of *D. lævis*.

D. tasmanica (Tasmanian).* *fl.* pale blue, drooping, ½in. to ¾in. in diameter; panicles large, loose, decompoundly branched, very many-flowered; perianth segments oblong, reflexed. Berries deep blue, ½in. to ¾in. long, broadly oblong. *l.* 3ft. to 4ft. long, broadly ensiform, with revolute margins, armed with spinular teeth. Tasmania, 1866. A very ornamental, large, rigid, grassy-leaved plant, sometimes attaining a height of 5ft. It forms a conspicuous ornament for the conservatory, its chief beauty consisting in the abundance of bright blue berries, which hang for many weeks on the hair-like pedicels. (B. M. 5551.)

DIANTHERA (from *dis*, two, and *anthera*, anther; the cells are more or less separated from one another). SYN. *Rhytiglossa*. Including *Porphyrocoma*. ORD. *Acanthaceæ*. A rather large genus of erect, ascendent, diffuse, or prostrate, stove, greenhouse, or hardy herbs. Flowers long, solitary or fascicled, bracteate; corolla with a narrow tube, which is either straight or incurved. Leaves entire, or rarely dentate. For culture, *see* **Justicia.**

D. americana (American). *fl.*, corolla pale violet, or whitish, less than ½in. long; base of lower lip rugose; peduncles mostly exceeding the leaves, capitately several-flowered. Summer. *l.* narrowly lanceolate, 3in. to 4in. long, tapering at base, subsessile. Stem sulcate-angled. *h.* 1ft. to 3ft. In water, Canada to South Carolina, Arkansas, and Texas. Hardy aquatic. SYN. *Justicia pedunculosa* (under which name it is figured in B. M. 2367).

D. ciliata (fringed).* *fl.* violet, with a white palate, numerous, fascicled. Winter. *l.* ovate-lanceolate, 2in. to 3in. long. *h.* 2ft. Venezuela, 1870. A pretty stove sub-shrub. SYN. *Beloperone ciliata*. (B. M. 5888.)

D. Pohliana (Pohl's).* *fl.* purple; bracts deep red, imbricated, rather large; spike terminating the branches, closely packed, cone-like. March. *l.* somewhat large, sessile, narrowed to both ends. Brazil, 1880. Stove. SYN. *Porphyrocoma lanceolata*. (B. M. 4176.)

D. secunda (side-flowering). *fl.* red, in compound terminal racemes; bracts setaceous. October to February. *l.* ovate-lanceolate, acuminate. Branches secund, many-flowered. West Indies, 1793. Stove. SYN. *Justicia secunda* (under which name it is figured in B. M. 2060).

DIANTHUS (from *dios*, divine, and *anthos*, a flower; the name given by Theophrastus, in allusion to the exquisite fragrance of the blossoms of most of the species, as well as from their unrivalled neatness and brilliancy). Pink. ORD. *Caryophylleæ*. Tufted, mostly glaucous herbs, often shrubby at the base. Flowers rose or purple, rarely white or yellow, terminal, solitary, panicled or fascicled; calyx tubular, five-toothed, furnished at the base with imbricating bracts (see Fig. 643); petals five, entire or cut, with long claws. Leaves narrow, grass-like. This genus consists of about seventy species, according to the authors of the "Genera Plantarum," although more than four times that number have been accorded specific rank by various botanists. Just a hundred are regarded as species by Nyman, in his enumeration of European plants. The list given below includes only such as are known to be in cultivation. In most cases, the specific distinctions are very trivial, and this fact has also necessitated several omissions. Hardy perennials, except where otherwise specified. For culture, *see* **Carnation** and **Pink.**

FIG. 643. DIANTHUS, showing Five-toothed Calyx and Bracts at Base.

D. aggregatus (aggregate). *fl.* pink, large, aggregate, sessile. June, July. *l.* lanceolate, many-nerved. *h.* 1ft. 1817. Biennial. (S. F. G. ii. 166.)

D. alpestris (rock).* *fl.* red, usually in pairs; petals emarginate. July. *l.* linear-lanceolate. *h.* 6in. to 9in. Alpine pastures of Europe, 1817.

FIG. 644. FLOWERS OF DIANTHUS BARBATUS.

D. alpinus (alpine).* *fl.* deep rose, spotted with crimson, very numerously produced, large: petals crenated. June. *l.* oblong-linear, obtuse, green. Stem leafy, one-flowered. *h.* 3in. to 4in. Alps of Austria, &c., 1759. (Gn., Aug. 30, 1884.)

D. arbusculus (little-tree).* *fl.* rich purple-crimson, panicled, aggregate, solitary, single or double; inner petals spotted at the base; petals toothed. July. *l.* lanceolate, and, as well as the shrubby stem, glabrous. *h.* 1½ft. China, 1824. Greenhouse or half-hardy evergreen. (B. R. 1086.)

Dianthus—*continued.*

D. arenarius (sand-loving).* *fl.*, petals divided beyond the middle into very narrow lobes, furnished with a livid spot and pressed purple hairs at the base of each, the rest white. Summer. Stems generally one-flowered. North and Eastern Europe. (B. M. 2038.)

FIG. 645. FLOWERING BRANCH AND SINGLE FLOWER OF DIANTHUS SUPERBUS.

D. atrorubens (dark-red).* *fl.* dark red, small, sessile, in aggregate heads; involucre ovate, awned, shorter than the heads of flowers. Summer. *l.* linear, three-nerved. *h.* 1ft. South and Eastern Europe, 1802. (B. M. 1775.)

D. Balbisii. A synonym of *D. liburnicus.*

D. barbatus (bearded).* Sweet William. *fl.* very variable in colour, aggregate, in bundles; petals bearded. Summer. *l.* lanceolate, nerved. South and Eastern Europe, 1573. See Fig. 644. Of this splendid old-fashioned plant, varieties are innumerable, and far exceed the type in point of beauty.

D. bicolor (two-coloured). *fl.* white above and lead-coloured beneath, solitary; petals dilated. Summer. *l.* awl-shaped, lower ones tomentose. Stem panicled. *h.* 1ft. to 2ft. Southern Russia, 1816.

D. cæsius (bluish-grey).* Cheddar Pink. *fl.* of a delicate rose-colour, very fragrant; petals crenated, pubescent. Summer. *l.* short, with scabrous margins. Stem tufted, generally one-flowered. *h.* 3in. to 6in. Europe (Britain). Plant very glaucous. (Sy. En. B. 193.)

D. Caryophyllus. Carnation; Clove Pink. *fl.* solitary, nearly every colour except blue; petals very broad, beardless. Summer. *l.* linear-awl-shaped, channelled, glaucous. Stem branched. South Europe. Naturalised here and there in England. There are numerous varieties of this species. *See* **Carnation.**

D. chinensis (Chinese).* Chinese or Indian Pink. *fl.* very variable in colour, but usually reddish, and are either single or double; solitary or somewhat aggregate; petals toothed. Summer. *l.* lanceolate, pale green. Stem branched. *h.* 6in. to 12in. China, 1713. Biennial.

D. c. Atkinsoni (Atkinson's)* is a beautiful garden hybrid, of which, in all probability, *D. chinensis* is one of the parents. It has deep blood-red flowers, and is one of the handsomest of old-fashioned garden Pinks. It seems difficult to increase by division or cuttings, and does not ripen seed. (Gn., Jan. 12, 1884.)

D. cruentus (bloody).* *fl.* bloody-scarlet, small, numerous; cymes contracted, somewhat globose; petals toothed, bearded towards the base with scattered reddish-violet hairs; calyx reddish-violet. Summer. *l.* linear lanceolate, very acute; lower ones tufted. Eastern Europe. (R. G. 26.)

D. deltoides (deltoid). Maiden Pink. *fl.* rose-coloured, with a dark circle, solitary. Summer. *l.*, upper ones narrow, acute, pubescent; lower ones oblong, obtuse. Stems ascending, branched. *h.* 6in. to 9in. Europe (Britain). (Sy. En. B. 192.)

Dianthus—*continued.*

D. dentosus (toothed). Amoor Pink. *fl.* violet-lilac, with a regular dark spot, formed of purple streaks, at the base of each petal, producing a dark eye in the centre of the flower, more than 1in. across; petals toothed at the margin, bearded at the base. Summer. *l.* linear, rather broad, sometimes slightly undulated, glaucous, tinged with a reddish hue. *h.* 6in. Southern Russia.

D. fimbriatus (fimbriate).* *fl.* rose-coloured, solitary; petals oblong, multifidly toothed, beardless. Summer. *l.* awl-shaped, scabrous. Stem suffruticose at the base, branched. *h.* 1ft. Iberia, 1815. (B. M. 1069, under name of *D. orientalis*).

D. Fischeri (Fischer's).* *fl.* rose-coloured, somewhat aggregate; petals multifid, almost beardless; fascicles closely-set, many-flowered. Summer. *l.* lanceolate, serrulated. Stem panicled. Russia, 1820. (S. B. F. G. 245.)

D. fragrans (fragrant).* *fl.* white, suffused with purple, fragrant; petals semi-multifid, beardless. July to September. *l.* awl-shaped, with roughish margins. Stems generally one-flowered. *h.* 6in. to 9in. Caucasus, 1804. (B. M. 2067.)

D. fruticosus (shrubby). Shrubby Pink. *fl.* dark in the middle, rose-coloured in the circumference, and white and pilose at the base, aggregate. Summer. *l.* obovate, lanceolate, obtuse. Stem shrubby. Half-hardy evergreen. *h.* 1ft. to 2ft. Grecian Archipelago (Island of Serfo), 1815. (S. F. G. 407.)

D. gallicus (Gallic). *fl.* white, livid at the base; petals dentately-multifid. July, August. *l.* linear, somewhat ciliated. Stems ascending, generally one-flowered. *h.* 6in. Western France, Northern Spain, and Portugal.

D. giganteus (gigantic). *fl.* purple, numerous, sessile, disposed in hemispherical heads, supported at the base by leafy bracts. Summer. *l.* linear, very long, connate at the base a long way. Stem round. *h.* 2ft. to 4ft. Eastern Europe, 1828.

D. glacialis (icy). *fl.* purple, small, scentless: petals serrated. Summer. *l.* linear, acute, serrulated, green. Stems erect, tufted, short, generally one-flowered. *h.* 3in. Mountains of Central Europe, 1820. (F. M. n. s. 268.

FIG. 646. FLOWER OF DIANTHUS SUPERBUS GARDNERI (CUT-FLOWERED CHINESE PINK).

Dianthus—*continued.*

D. Holtzeri (Holtzer's).* *fl.* pink, about 1½in. in diameter; petals more or less fringed. *l.* linear-lanceolate. Turkestan. (R. G. 1032, 1.)

FIG. 647. FLOWERS OF DOUBLE VARIETY OF DIANTHUS CARYOPHYLLUS (CARNATION).

D. latifolius (broad-leaved). *fl.* pink, aggregate, racemosely corymbose. Summer. *l.* oblong-lanceolate. *h.* 1½ft. The habit of this plant is very like that of *D. barbatus*, but the leaves are broader, and the flowers double the size. Native country unknown. (S. B. F. G. 2.)

D. liburnicus (Liburnian). *fl.* red, almost sessile, in capitate bundles. August. *l.* lanceolate-linear. Stem angular. *h.* 1ft. to 2ft. South and Eastern Europe, 1817. Plant glaucous. SYN. *D. Balbisii.*

D. monspessulanus (Montpelier). *fl.* red, solitary; petals digitately multifid, smooth in the throat. Summer. *l.* linear, serrulated. Stem panicled, few-flowered. *h.* 6in. to 12in. South and Eastern Europe, 1764.

D. neglectus (neglected).* *fl.* deep rose; petals serrated. Summer. *l.* green, linear, acute, serrulated. Stems erect, tufted, short, generally one-flowered. *h.* 2in. to 4in. South-west Europe, 1869.

FIG. 648. DIANTHUS CHINENSIS FLORE-PLENO.

D. pallidiflorus (pale-flowered). *fl.* purplish-rose, very numerous, solitary. Late summer. *l.* linear, pointed, flat, sessile. *h.* 6in., forming dense and branching tufts. Russia.

Dianthus—*continued.*

D. petræus (rock). Rock Pink. *fl.* rose, usually solitary on the freely-produced stems; petals beardless, multifid. Summer. *l.* awl-shaped, entire, glabrous. *h.* 6in. Eastern Europe, 1804.

D. plumarius (feathered).* Garden Pink; Pheasant's Eye. *fl.* white, purple, either double or single, spotted or variegated, and more or less fringed on the margins, sweet-scented; petals jagged, multifid, bearded. Summer. *l.* linear, with scabrous margins. Stems two or three-flowered. *h.* 9in. to 12in. Eastern Europe, 1629. Plant glaucous. (Sy. En. B. 195.)

FIG. 649. FLOWER OF DIANTHUS CHINENSIS HEDDEWIGII FLORE-PLENO.

D. Seguierii (Seguier's).* *fl.* rosy-purple. Summer. *h.* 1ft. South and Eastern Europe, Asia, 1832.

D. squarrosus (spreading). *fl.* like those of *D. plumarius*, but with a longer calyx; petals white, finely jagged. Summer. *l.* awl-shaped, channelled, stiff, short, recurved. Stems generally one-flowered. *h.* 6in. Southern Russia, 1817.

D. suavis (sweet). *fl.* pink, sweet-scented; petals bearded, doubly and deeply serrated. Summer. *l.* linear, spreading, glaucous. Stems generally one-flowered. *h.* 6in. Native country unknown.

FIG. 650. FLOWER OF DIANTHUS CHINENSIS PLENISSIMUS.

D. superbus (superb).* *fl.* rose-coloured, very fragrant, particularly at night, somewhat fastigiate; petals divided beyond the middle, feathery, bearded at the base. Summer. *l.* linear-lanceolate, bright green, acute, entire. Stems smooth, panicled, many-flowered. *h.* 9in. to 18in. Europe and Asia, 1596. See Fig. 645. (B. M. 297.)

D. s. Gardneri (Gardner's), is a fine variety, with very large laciniated flowers. China. See Fig. 646.

Dianthus—*continued.*

D. virgineus (virgin). *fl.* red; petals crenated. Summer. *l.* tufted, linear, stiff, serrulate. Stems generally one or few-flowered. *h.* 6in. to 12in. South-western Europe, 1816. (B. M. 1740.)

VARIETIES. Innumerable varieties are in cultivation of three species belonging to this genus, namely, *D. barbatus* (the Sweet William), *D. Caryophyllus* (the Carnation and Clove Pink, see Fig. 647), and *D. chinensis* (the Chinese or Indian Pink), a double form of which is shown in Fig. 648. In garden literature, the generic name is generally only applied to the last of these three, the others being well-known under their popular garden names. Although a biennial, *D. chinensis* may be successfully grown as an annual, by sowing in pots or in the open ground, in March. There are double and single forms, in a great variety of colours, the flowers of the former being best adapted for cutting; while the latter are the most showy. *D. c. Heddewigii*, and the numerous seedlings obtained from it, represent an exceedingly useful class of dwarf plants for mixed borders, or for pot culture, many of the flowers being beautifully marked and fringed. Its double form (see Fig. 649) is not so floriferous, but is distinct and useful for cutting. *D. c. plenissimus* (see Fig. 650) is a variety with very full double flowers, beautifully fringed.

DIAPENSIA (meaning obscure). ORD. *Diapensiaceæ*. A genus of two species of small, tufted herbs. Flowers white or purplish-rose, solitary, erect, pedunculate; corolla salver-shaped; tube short, wide; limb flat. Peduncles scape-formed, one-flowered. Both these little gems are usually considered difficult to cultivate; but they have been found to succeed on fully exposed rockwork, in deep sandy peat, kept well moistened during the warm season. Increased by division.

D. barbulata. *See* **Pyxidanthera barbulata.**

FIG. 651. DIAPENSIA LAPPONICA.

D. lapponica (Lapland).* *fl.* pure white; peduncles usually one-flowered, erect. July. *l.* linear-spathulate, coriaceous, with callous, sub-revolute edges. *h.* 1in. to 2in. Norway, Lapland, Arctic America, &c. See Fig. 651. (B. M. 1108.)

DIAPENSIACEÆ. A small order of prostrate sub-shrubs, principally inhabiting the colder parts of Europe and North America. Calyx persistent, five-parted; segments imbricated; stamens five, free, adnate to, or alternating with, the segments of the corolla. Leaves sometimes small, numerous, sessile, imbricated, narrow, and entire; sometimes large, orbiculate, dentate. The order includes the genera *Diapensia*, *Galax*, *Pyxidanthera*, and *Shortia*, as well as two others which have not yet found their way into cultivation.

DIAPHANOUS. Transparent.

DIASCIA (from *diaskeo*, to adorn; in reference to the pretty flowers). ORD. *Scrophularineæ*. Very pretty greenhouse annual herbs. In this genus, there are about a score species, all natives of South Africa. Seeds may be sown in a gentle heat, early in spring, and the seedlings transferred, like Lobelias and other bedding plants, to the open, about June.

D. Barberæ (Mrs. Barber's). *fl.* rosy-pink, double-spurred, disposed in terminal racemes. July. *l.* ovate, bluntly serrate. *h.* 1ft. 1871. (B. M. 5933.)

DIASTEMANTHE. A synonym of **Stenotaphrum.**

DIBBER, or DIBBLE. A useful instrument in gardens, often made from a hard piece of wood, such as an old spade handle, and principally employed for planting out seedlings, of small or medium size. Dibbers, when used on a large scale, are usually cased with a hollowed, tapering point of steel. In heavy soils, the sides of the hole are liable to become polished with the steel sheath, and the roots do not then penetrate them freely. Light soils give when the Dibber is inserted,

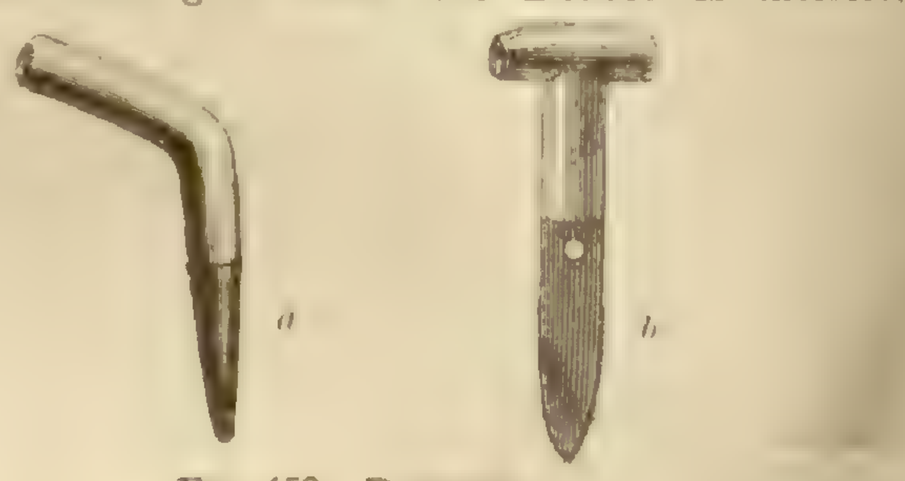

FIG. 652. DIBBERS.

consequently they are best suited for its use. Fig. 652 represents two forms of steel-cased Dibbers in general use. One (*a*) is made from a piece of wood of the shape represented, and is preferred by some to the other (*b*), which may be prepared from a spade handle.

DIBBLEMMA. *See* **Polypodium.**

DIBBLING. The process of planting with a Dibber. Its chief advantages lie in economising the plants, and rendering thinning almost unnecessary. Seedlings growing closely together should be dibbled out temporarily, until sufficiently strong for placing in permanent quarters by the same method. Dibbling has some disadvantages, the roots often being placed straight down instead of in the natural way in which they grow. It is, however, an expeditious mode, much practised with fast-growing

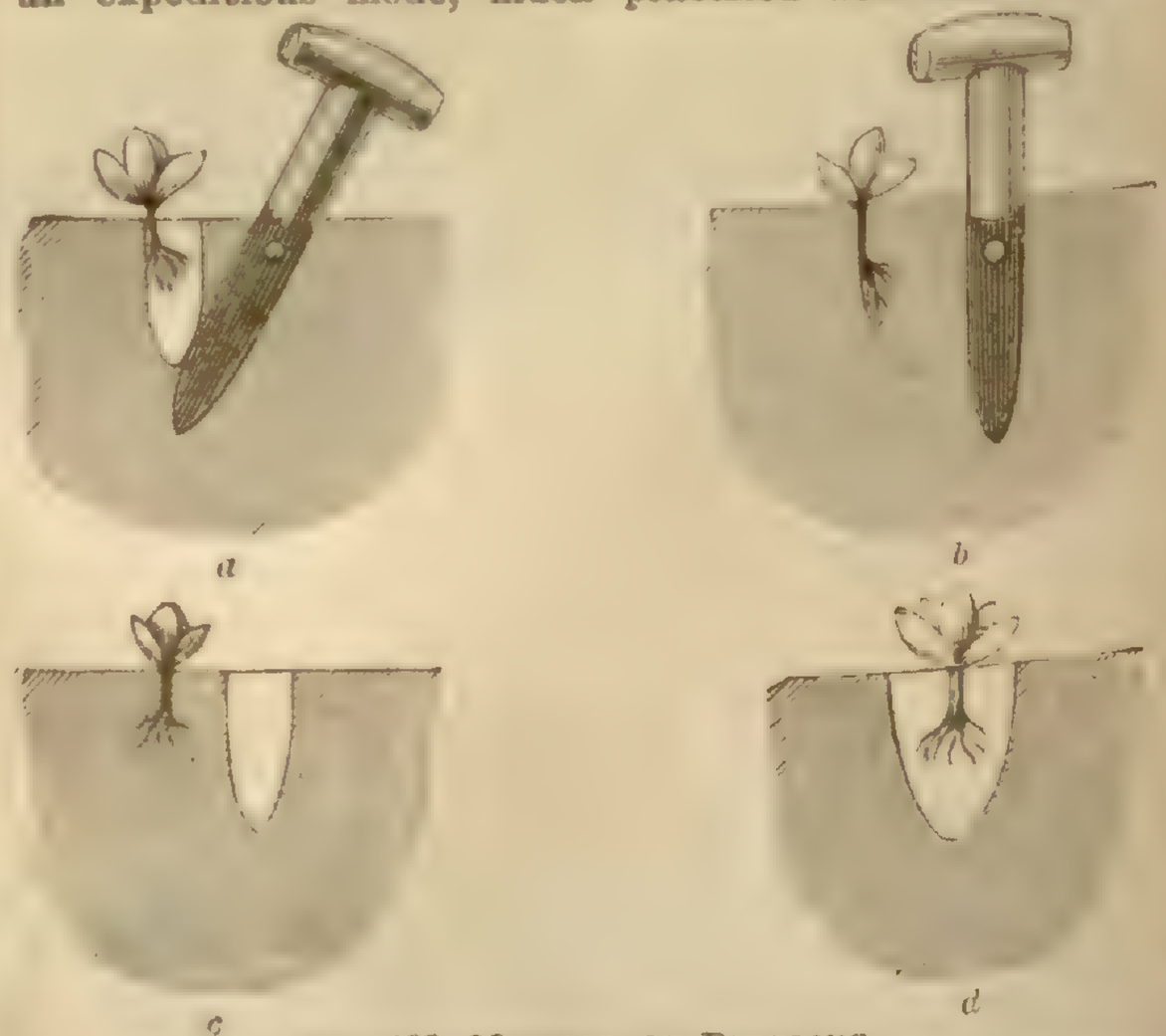

FIG. 653. METHOD OF DIBBLING.

plants that soon form new roots. The process is shown in the accompanying engravings (see Fig. 653), where *a*

Dibbling—*continued.*

represents the position of the Dibber for pressing the soil against the roots; *b*, its position when this is completed; and *c*, the Dibber removed, leaving the hole for watering. The next illustration (*d*) shows a more careful way of planting, on a small scale, by making a hole with a Dibber, afterwards arranging the roots and filling in by hand. A long Dibber is often used for planting Potatoes; it is large enough to make a hole for the set to drop in, and has a cross handle, for the use of both hands, and a projecting piece of iron or wood which serves the double purpose of forming a tread and insuring an equal depth to all the holes made. For inserting cuttings or young plants, small tapering pieces of wood are employed.

DICENTRA (from *dis*, twice, and *kentron*, a spur; in allusion to the double-spurred flowers). SYNS. *Capnorchis* and *Diclytra* (often written *Dielytra*). ORD. *Fumariaceæ*. Very ornamental hardy herbaceous perennials, with tuberous, horizontal, or fibrous roots. Flowers pink or yellow, in terminal racemes; petals four, the two exterior ones equally spurred or gibbous at the base. Leaves stalked, multifid. They are all of easy culture in moderately rich, light soil. Increased readily by dividing the crowns, in early spring; or by cutting the fleshy roots in short lengths, and inserting them in sandy soil. *D. spectabilis* is very beautiful when forced in early spring, but the forcing must be very gentle, and the plants kept as near the glass as possible. A moist temperature of 50deg. to 55deg. will be sufficient. As a rule, it is much preferable to have fresh plants every year, returning those which have flowered under glass to the open border. The roots should be placed in a compost of sandy loam, in well-drained pots, as soon as the foliage dies off, and transferred to a cold frame until introduced into the house. After flowering, the plants should be removed to a cold frame, to be shifted out in the borders when severe frosts are past. Successional batches may be brought in as occasion requires, and, with little trouble, the flowering period can be prolonged from February to June. Plenty of water is necessary when the plants are in full growth, and occasional doses of liquid manure may be employed with advantage.

D. canadensis (Canadian). *fl.* white; spurs two, short, blunt; pedicels short; scape naked, simple, few-flowered. May. *l.*

FIG. 654. DICENTRA EXIMIA.

Dicentra—*continued.*

glaucous, multifid; lobes linear. *h.* 6in. North America, 1822. (B. M. 3031.)

D. chrysantha (golden-flowered).* *fl.* golden-yellow, disposed in erect racemes. Autumn. *l.* very finely cut, glaucous, forming a large tuft, whence issue the rigid, leafy stems. *h.* 3ft. to 5ft. California, 1852. (L. & P. F. G. iii. 103.)

D. cucullaria (hooded). Dutchman's Breeches. *fl.* white, but yellow at the tip; spurs two, straight, acute; scape naked; racemes simple. May. *l.* triternate, smooth, slender. *h.* 3in. to 6in. United States, 1731. (F. d. S. 920.)

D. eximia (choice).* *fl.* reddish-purple, drooping, oblong; spurs two, somewhat incurved, blunt, short; scape naked; racemes compound. Spring and summer. *l.* three to eight, or more; lobes mostly oblong. *h.* 9in. to 18in. United States, 1812. See Fig. 654. (B. R. 50, under name of *Fumaria eximia*.)

D. formosa (beautiful).* *fl.* bright red, broadly ovate; spurs short, very obtuse; scape naked; racemes rather compound. May. *h.* 6in. North America, 1796. Very like *D. eximia*, but smaller in all its parts. SYN. *Fumaria formosa*. (B. M. 1335.)

FIG. 655. DICENTRA SPECTABILIS.

D. spectabilis (showy).* *fl.* rosy-crimson, large, each nearly 1in. long, disposed in a graceful raceme; spurs two, very blunt, ventricose, short. Spring, summer. *l.* stalked, multifid; segments obovate-cuneate, cut. Stem leafy. *h.* 9in. to 2ft. Siberia (1816) and Japan (1846). A very handsome plant, and one of the best hardy herbaceous perennials in cultivation. It is suitable for borders, margins of shrubberies, &c. See Fig. 655. There is also a white-flowered variety.

D. thalictrifolia (Thalictrum-leaved).* *fl.* yellow, with rufescent mouth, fragrant, large, oblong, flattish, nodding, dilated at the base into two horns or gibbosities; racemes axillary or opposite the leaves, on long, filiform peduncles. Autumn. *l.* alternate, decompound; segments ¼in. to 1in. long, oval, oblong, or circular. Stem and branches filiform and twisted. Temperate Himalaya, 1831. Plant glaucous. SYN. *Dactylicapnos thalictrifolia*. (S. B. F. G. s. ii. 127.)

DICERMA. *See* **Desmodium.**

DICHÆA (from *dicha*, bifarious; the leaves are in two rows). ORD. *Orchideæ*. A genus of epiphytal stove orchids, natives of the West Indies and tropical America. Flowers greenish, solitary, inconspicuous, axillary. Leaves small, ovate-oblong or linear, arranged in a two-ranked manner. Stems short, erect or creeping. There are about a dozen species known, only one of which, perhaps, is in general cultivation. *D. picta* thrives in a warm part of the Mexican house, if grown on a block of wood, with a little moss attached, to prevent the tender roots from drying too much.

D. picta (dotted). *fl.* light leek-green, with purplish dots, axillary: lip unguiculate, sagittate, without any crest; flower-stalks purplish; sepals cuneate-oblong, acute. *l.* distichous, numerous; laminæ linear-lanceolate, acuminate, oblique, nearly perpendicular, glaucous. Trinidad, 1870. A very interesting and elegant little plant. (Ref. B. 84.)

DICHLAMYDEOUS. Furnished with two floral envelopes.

DICHOGAMOUS. When the florets of an inflorescence are of two separate sexes.

Dichorisandra—*continued.*

petals, like the sepals, distinct; stamens six (sometimes only five), all perfect, with short, erect, naked filaments. Stems erect or ascending, often branched. To grow

FIG. 656. DICKSONIA BERTEROANA, showing Habit and Upper Portion of Detached Frond (see page 467).

DICHORISANDRA (from *dis*, twice, *chorizo*, to part, and *aner*, an anther; referring to the anthers being two-valved). ORD. *Commelinaceæ*. A genus of stove herbaceous perennials, containing several beautiful-flowered plants, many of which have also very ornamental leaves. Sepals green or coloured, three, sub-equal, ovate or oblong; petals, like the sepals, distinct; stamens six (sometimes only five), all perfect, with short, erect, naked filaments. Stems erect or ascending, often branched. To grow Dichorisandras vigorously, they should be potted in a compost of peat, loam, and leaf mould, in about equal parts, with the addition of a little silver sand. A liberal supply of water, with ordinary stove heat, and shading from the direct rays of the sun, will be necessary during the summer. In winter, they should be kept much

Dichorisandra—*continued.*

drier, but must not be exposed to cold. Propagated by divisions, by cuttings, or by seeds. Besides the species described below, about seven or eight others are believed to have been introduced.

D. albo-marginata (silvery-margined). *fl.* in a dense raceme, 2in. long; sepals white, blue, and puberulous outside; petals larger, rhomboid-ovate, blue, the lower part white. *l.* lanceolate, acuminate. Stem erect, glabrous, simple or branched above. *h.* 2ft. to 3ft. Brazil, 1868. (R. G. 569.)

D. leucophthalmus (white-eyed).* *fl.* often three together, each on a branch of the peduncle, large; peduncle or scape emerging from a joint at or near the base of the stem, prostrate, glabrous, flexuous, panicled, here and there sheathed with brown scales; bracts from a broad base, subulate, herbaceous; sepals oblong, concave, spreading, between herbaceous and scariose; petals four times as large as the sepals, broadly obovate, spreading, blue-purple, white in the lower half; anthers bright yellow. June. *l.* 4in. to 6in. long, elliptic-lanceolate, sharply acuminated, moderately attenuated below, till they form the sheath; striated, patent, and often recurved. Stems two or three together, erect, terete, jointed, 9in. or more high, glabrous. *h.* 1ft. to 1½ft. Brazil. (B. M. 4733.)

D. musaica (mosaic).* *fl.* bright azure-blue, disposed in a terminal spike or truss. Autumn. *l.* ovate, acute, dark green above, profusely pencilled and veined with zigzag transverse lines of pure white; under side deep reddish-purple. Stems terete, chequered, surrounded at the nodes by close brownish sheaths. *h.* 1½ft. Maynas, 1866. (F. d. S. 1711-2.)

D. oxypetala (sharp-petalled). *fl.*, corolla of three reddish-purple-veined, ovate, acute, spreading petals, with a white spot at the base; pedicels remote, two-flowered, the upper ones very short, the lowest one long, deflexed; pedicels and flowers with small brown ovate bracts; calyx of three ovate, acute, spreading, reddish-purple veined petals, with a white spot at the base; anthers linear-oblong, whitish at the base. August. *l.* confined to the upper part of the stem, alternate, elliptical, attenuated, both at the base and at the extremity, entire, striated, the sides a little incurved, very glabrous, except a little pubescence at the base, on the under side. Stem oblique, simple, or forked. *h.* 2ft. 1810. (B. M. 2721.)

D. picta (spotted). *fl.* purple-blue, with a very distinct white spot at the base, about 1in. across, disposed in short terminal panicles. September. *l.* broad-elliptic, about 4½in. long, green, with a broad stripe of brown on each side, but edged with green. Branches short. *h.* 6in. Brazil, 1830. (B. M. 4760.)

D. Saundersii (Saunders'). *fl.* ⅔in. in diameter, crowded in a dense ovoid, almost capitate panicle, 2in. long; pedicel very short, glabrous; sepals oblong, obtuse, concave, glabrous, white, tipped with violet; petals more than twice as large as the sepals, obovate, concave, rounded at the tip, violet except at the base, which is white. July. *l.* numerous, sub-bifarious, lanceolate, long-acuminate, recurved for the most part, five-nerved, dark green, suddenly contracted at the base into the sheath; margins recurved in the lower part, pale beneath; sheaths hardly tumid, green; mouth rounded. Stem slender, very sparingly branched. Branches slender, cylindrical, terete, pilose. *h.* 2ft. Brazil, 1873. (B. M. 6165.)

D. thyrsiflora (thyrse-flowered).* *fl.* of a rich dark blue, to which the bright yellow anthers form a pleasing contrast; thyrse compact, often 6in. or 7in. in length. Summer and autumn. *l.* broad, sheathing, extremely dark green. *h.* 4ft. Brazil, 1822. A splendid stove plant, of easy culture, now, unfortunately, rarely seen. One of the handsomest flowers of the order. (B. R. 682.)

D. undata (wavy). *l.* broadly ovate, dark green, with longitudinal bands, alternately of green reflected with silver, and of green shaded to black, strikingly undulated or waved; under surface of a uniform purple. Amazons, 1879. A very dwarf-growing species. (F. d. S. 1763-4.)

D. vittata (striped). *l.* purplish-green, with two silvery stripes. Brazil, 1871.

DICHOSMA. *See* **Agathosma.**

DICHOTOMOUS. Divided in twos; stems continually dividing into double ramifications.

DICHROSTACHYS (from *dichros*, two-coloured, and *stachys*, a spike; in allusion to the lower flowers of each spike differing in colour from those above). ORD. *Leguminosæ.* A small genus of four or five species of rigid stove shrubs, extending over tropical Africa and Asia, one being confined to Australia. Flowers, upper ones yellow, hermaphrodite; lower ones either white, pink, or purple, neuter. Leaves bipinnate; leaflets usually small. The under-mentioned is probably the only one yet in cultivation. For culture, *see* **Mimosa.**

D. platycarpa (broad-podded). *fl.*, the upper half of spike bright yellow, the other rose-coloured, produced in pendulous spikes about 1½in. long. *l.* glaucous-green, bipinnate, with fourteen or more pairs of pinnæ; leaflets from twenty-six to thirty pairs. Angola, 1866.

DICHROTRICHUM (from *dichroos*, having two colours, and *thrix*, hair; in reference to the tufts of hair at the end of each seed, in the original species, being differently coloured). ORD. *Gesneraceæ.* A small genus of showy stove perennials, with habit of, and requiring treatment similar to, **Æschynanthus** (which *see*). Probably the only one in cultivation is that here described.

D. ternateum (Ternate).* *fl.* crimson-red, tubular, sub-umbellate, in loose cymes. July. *l.* unequal, opposite; the large one cordate. Moluccas, 1872. (B. H. 1871, 22.)

DICKSONIA (named after James Dickson, a famous British cryptogamic botanist). Including *Balantium, Cibotium, Dennstædtia, Patania, Sitolobium.* ORD. *Filices.* A genus of about forty species of stove and greenhouse ferns, the majority being natives of tropical America and Polynesia. Fronds mostly large, decompound, coriaceous. Involucre inferior, sub-globose, coriaceous or membranaceous, cup-shaped, and entire or more or less distinctly two-valved. Sori placed at the apex of a vein, intramarginal. A compost of light, fibrous loam and peat, in equal parts, with about one-third sand, is most suitable. For general culture, *see* **Ferns.**

D. adiantoides (Adiantum-like). *rhiz.* creeping. *fronds* bipinnate; lower pinnæ 1ft. to 2ft. long, 6in. to 12in. broad; pinnules linear, cut down nearly to the rachis; segments oblong-rhomboidal, blunt, with two to four bluntish lobes in each side. *sori* two to eight to a segment. West Indies, 1828. Stove. (H. S. F. i. 26 B.)

D. antarctica (Antarctic).* *cau.* 30ft. to 35ft. high. *stf.* under 1ft. long, scaly. *fronds* rhomboid, tripinnate, 5ft. to 6ft. long, 2ft. to 3ft. broad in centre; central pinnæ 1ft. to 1½ft. long, 4in. to 5in. broad; pinnules sessile, linear, ¼in. broad; segments oblong. *sori* six to ten to lowest segment. 1786. Arborescent. Greenhouse.

D. arborescens (tree-like). *cau.* 10ft. high. *fronds* bipinnate; lower pinnæ 1ft. to 1½ft. long, 6in. to 9in. broad; pinnules linear, deeply cut; segments ¼in. long, oblong. *sori* two to six to a lobe, large, globose. St. Helena, 1824. Arborescent. Greenhouse. (H. S. F. i. 22A.)

D. assamicum (Assam). A synonym of *D. Barometz.*

D. Barometz (Barometz). *fronds* tripinnate; lower pinnæ ovate-lanceolate, 1ft. to 2ft. broad; pinnules linear-acuminate, cut nearly to the rachis; segments linear-oblong, acute, sub-falcate. *sori* two to twelve to a lobe. Assam, China, 1824. Arborescent. Greenhouse. SYN. *D. assamicum.* (H. S. F. i. 29 B.)

D. Berteroana (Bertero's).* *cau.* 6ft. to 15ft. high. *fronds* rhomboid, tripinnate; pinnæ oblong-lanceolate, 1ft. to 1½ft. long, 5in. to 6in. broad; pinnules sessile, lanceolate, about 1in. broad; segments close, lanceolate, sterile sub-entire, fertile deeply pinnatifid. Juan Fernandez, 1880. Arborescent. Greenhouse. See previous page, Fig. 656, for which we are indebted to Messrs. Veitch and Sons. (H. S. F. i. 23 A.)

D. Chamissoi (Chamisso's). *fronds* tripinnate; lower pinnæ ovate-lanceolate, 1ft. to 1½ft. long, 6in. to 9in. broad; pinnules linear-acuminate, cut down to the rachis below; segments oblong, bluntish. *sori* two to twelve to a lobe. Sandwich Islands, 1876. Stove.

D. chrysotricha (golden-haired).* *fronds* bipinnate; lower pinnæ 1ft. to 1½ft. long, 6in. to 9in. broad; pinnules linear, very deeply cut; segments linear-oblong, deeply toothed, ½in. long; fertile pinnules slightly contracted; main rachis clothed with a thick coat of shining yellowish-brown hairs at the base. Java, 1875. Arborescent. Stove.

D. cicutaria (Cicuta-like). *rhiz.* creeping. *fronds* bipinnate; lower pinnæ 1ft. to 1½ft. long, 6in. broad; pinnules linear-acuminate, deeply cut; segments oblong-deltoid, deeply inciso-pinnatifid. *sori* two to twelve to a segment. West Indies. Stove.

D. Culcita (Culcit). *rhiz.* densely clothed with shining hairs. *fronds* 1ft. to 1½ft. long, 1ft. broad, tripinnate; lower pinnules deltoid, their divisions ovate, deeply cut with oblong-rhomboidal, unequal-sided, deeply-toothed segments; fertile fronds much contracted. *sori* one line across. Madeira and the Azores. The dense woolly covering of the rhizomes has become an article of commerce; it is used for stuffing cushions, &c. Greenhouse. See Fig. 657.

D. cuneata (cuneate). *fronds* sub-deltoid, four-pinnatifid; pinnæ lanceolate, 6in. to 12in. long; pinnules close, short-stalked, lanceolate, ½in. broad; segments oblong-rhomboidal, inciso-pinnatifid. *sori* at base of ultimate sinuses. Philippines. Stove. (H. S. F. i. 28 C).

D. davallioides (Davallia-like). *fronds* tripinnate; lower pinnæ 6in. to 9in. long, 3in. to 4in. broad; pinnules linear-acuminate, cut down to the rachis; segments oblong-rhomboidal, deeply inciso-pinnatifid. *sori* two to eight to a segment. Australia. Greenhouse.

D. dissecta (cut-leaved). A synonym of *D. rubiginosa.*

D. fibrosa (fibrous).* *sti.* very short, densely scaly. *fronds* rhomboid, tripinnate, 3ft. to 4ft. long; central pinnæ lanceolate, 6in. to 9in. long; pinnules sessile, linear, 1in. to 1½in. long; segments crowded, deltoid, falcate, deeply pinnatifid. *sori* four

Dicksonia—*continued.*

FIG. 657. DICKSONIA CULCITA.

to six to largest segment. New Zealand. Arborescent. Greenhouse. (H. S. F. i. 23 B.)

D. flaccida (weak). *fronds* tripinnate; lower pinnæ 9in. to 15in. long, 6in. broad; pinnules lanceolate, cut down to the rachis; lower segments ovate-rhomboidal, bluntish, cut down to the rachis three or four times on each side, and the lobes again toothed. *sori* two to eight to a segment. Aneiteum, &c. Very closely allied to *D. rubiginosa*. Stove.

D. glauca (glaucous). *fronds* tripinnate, ovate-lanceolate, 1ft. to 1½ft. long, 6in. to 9in. broad; pinnules linear-acuminate, cut down to the rachis in the lower part; lobes linear-oblong. *sori* two to twelve to a lobe. Sandwich Isles, 1879. Arborescent. Stove. (H. S. F. i. 29 A.)

D. lanata (woolly). *cau.* low. *sti.* about 1ft. long. *fronds* rhomboid, tripinnate, 3ft. to 4ft. long; central pinnæ oblong-lanceolate, about 1ft. long; pinnules lanceolate, stalked, 1½in. to 3in. long, less than 1in. broad. *sori* crowded, six to twelve to largest segment. New Zealand. Greenhouse. (H. S. F. i. 23 C.)

FIG. 658. DICKSONIA MENZIESII.

D. Menziesii (Menzies').* *fronds* tripinnate; lower pinnæ 1ft. to 1½ft. long, 6in. to 9in. broad; pinnules linear-acuminate, cut down about half-way to the rachis; lobes rounded, blunt. *sori* two to eight. Sandwich Islands, 1876. Stove. See Fig. 658. (H. S. F. i. 29 C.) *D. pruinata* is a form having lobes of the pinnules denticulate.

D. moluccana (Moluccas). *fronds* tripinnate; lower pinnæ 1ft. to 1½ft. long, 9in. to 18in. broad; pinnules linear-lanceolate, cut down to the rachis; lower segments oblong-rhomboidal, deeply

Dicksonia—*continued.*

cut, with blunt, oblong-deltoid lobes. *sori* two to twelve to a segment. Main and secondary rachises prickly. Java. Stove. *D. scandens* is probably a variety of this species.

D. pilosiuscula (slightly hairy). A synonym of *D. punctilobula*.

D. punctilobula (dotted-lobed). *fronds* 1ft. to 1½ft. long, 6in. to 9in. broad, lanceolate, bipinnate; lower pinnæ lanceolate, 4in. to 6in. long, deeply cut; pinnules ovate-rhomboidal, about ½in. long, deeply pinnatifid. *sori* two to twelve to a pinnule. North America, 1811. This is the only hardy species of the genus Pleasantly fragrant. SYN. *D. pilosiuscula*.

D. regalis (regal).* *fronds* oblong-deltoid, tripinnate; pinnæ oblong-lanceolate, 1½ft. to 2ft. long, 10in. to 12in. broad; pinnules sessile, 1in. to 1¼in. broad, cut down to the rachis; segments close, lanceolate-falcate, inciso-pinnatifid. *sori* ten to twelve to a segment. Mexico, 1864. Arborescent. Greenhouse. SYN. *Cibotium regale*.

D. rubiginosa (rusty). *fronds* tripinnate; lower pinnæ 1ft. to 1½ft. long, 6in. to 9in. broad; pinnules linear, cut down to the rachis; lower segments deltoid, or oblong-rhomboidal, deeply inciso-pinnatifid. *sori* two to twelve to a segment. Tropical America. Stove. SYN. *D. dissecta*. (H. S. F. i. 27 A.) *D. anthriscifolia* is a variety with segments larger and more divided.

D. Schiedei (Schiede's). *cau.* 10ft. to 15ft. high. *fronds* oblong-deltoid, tripinnate; pinnæ oblong-lanceolate, 1ft. to 2ft. long; pinnules linear-lanceolate, deeply cut; segments close, lanceolate, dentate. *sori* four to six to a segment. Mexico, 1846. Greenhouse. (H. S. F. i. 30 A.)

D. Sellowiana (Sellow's).* *fronds* 6ft. to 8ft. long, 2ft. to 3ft. broad, lanceolate, bipinnate; lower pinnæ 1ft. to 1¼ft. long, 3in. to 4in. broad; pinnules linear, deeply cut; segments ¼in. long, close, oblong-deltoid. *sori* two to six to a lobe. Brazil, 1871. Arborescent. Stove. (H. S. F. i. 22 B.)

D. spectabile (showy). A garden synonym of *D. Wendlandi*.

D. squarrosa (rough-stemmed).* *sti.* castaneous, 6in. to 12in. long, densely scaly. *fronds* oblong-deltoid, tripinnate; pinnæ oblong-lanceolate, 9in. to 15in. long, 4in. to 6in. broad; pinnules subsessile, linear, 2in. to 3in. long; segments lanceolate. *sori* six to eight to lower segments. New Zealand. Arborescent. Greenhouse.

D. Wendlandi (Wendland's). *fronds* oblong-deltoid, tripinnatifid; pinnæ oblong-lanceolate, 1ft. long, 4in. to 6in. broad; pinnules sessile, linear, cut down to a narrow wing; segments close, lanceolate, acute. *sori* close, four to eight to a segment. Arborescent. Guatemala. Stove. SYN. *D. spectabile*, of gardens.

D. Youngiæ (Mrs. Young's). *sti.* 6in. to 9in. long, castaneous, densely scaly. *fronds* oblong-deltoid, tripinnate; pinnæ oblong-lanceolate, 1ft. long, 5in. to 6in. broad; pinnules sub-sessile, lanceolate, 2in. to 3in. long; segments lanceolate, close. *sori* six to eight to lower segments. Australia, 1865. Arborescent. Greenhouse.

FIG. 659. FLOWERING BRANCH OF DICTAMNUS ALBUS (see page 469).

DICLINOUS. Having stamens in one flower, and pistils in another.

DICLIPTERA (from *diklis*, double-doored, and *pteron*, a wing; referring to the two-celled winged capsule or seed-vessel). ORD. *Acanthaceæ*. A genus of stove or greenhouse annuals, perennials, and evergreen herbs, rarely, if ever, seen in cultivation outside botanic gardens. There are about fifty species. For culture, *see* **Justicia.**

D. Tweediana (Tweedie's). *fl.* orange-red, numerous, tubular. Autumn. *l.* opposite, oblong-obtuse. Monte Video, 1874. A very showy greenhouse perennial, with numerous stems. (R. H. 1874, 171.)

DICLYTRA. *See* **Dicentra.**

DICOTYLEDONOUS. Having two cotyledons.

DICOTYLEDONS. This name is now more generally used than Exogens. It is one of the two classes into which Phænogamous or flowering plants are divided. The distinguishing characteristics may be briefly stated: Flowers with the organs mostly in fours or fives. Embryo with opposite cotyledons. Leaves usually with netted veins. Stem with bark, pith, and interposed wood; when perennial, increasing annually in diameter by a layer of wood, added to the outside of the old wood, and another of bark added to the inside of the old bark.

DICTAMNUS (from *Diktamnos*, the old Greek name used by Hippocrates). Dittany, or Fraxinella. ORD. *Rutaceæ*. A strong-smelling herb. Flowers white or rosy, showy. Leaves alternate, impari-pinnate, exstipulate, with four to six pairs of serrulate leaflets, full of pellucid dots. Stems glandular at the apex. It is of easy culture in ordinary garden soil, preferring, however, a rather dry position. Propagated by divisions; or by seed, which should be sown when secured.

D. albus (white).* Fraxinella. *fl.*, racemes long, terminal. May June. *l.* pinnate; leaflets four to five pairs, cordate at the base, acute at the apex, finely serrulated. *h.* 1ft. to 1½ft. South Europe, 1596. The whole plant, especially when gently rubbed, emits an odour like that of lemon-peel; but, when bruised, it has something of a balsamic scent. Eastern Europe, Asia. SYN. *D. Fraxinella.* See Fig. 659, page 468. There are varieties with white, and also with pale purple, flowers.

D. Fraxinella (Fraxinella). A synonym of *D. albus.*

DICTYANTHUS (from *diktyon*, network, and *anthos*, a flower; alluding to the markings on the corolla). SYNS. *Rytidoloma, Tympananthe.* ORD. *Asclepiadeæ.* Pretty stove climbers. Besides the one described below, there are three other species not yet introduced to cultivation. All are natives of Mexico. For culture, *see* **Passiflora.**

D. Pavonii (Pavon's). *fl.*, corolla whitish, spotted, elegantly veined. September. *l.* opposite, cordate. *h.* 10ft. 1854. (B. M. 4750.)

DICTYMIA. *See* **Polypodium.**

DICTYOGRAMMA. *See* **Gymnogramme.**

FIG. 660. DIEFFENBACHIA AMŒNA (see page 472).

DICTYOPTERIS. *See* **Polypodium.**

DICTYOSPERMA (from *diktyon*, a net, and *sperma*, a seed; in allusion to the raphe of the seed forming a loose network.). ORD. *Palma*. A genus of stove palms, related to *Areca*. Flowers unisexual, often in threes (one female between two males). Leaves pinnate; leaflets with the sides reflexed before unfolding. For culture, *see* **Areca**.

D. album (white).* *l.* 4ft. to 8ft. long, pinnate; petioles clothed with white tomentum; leaflets 2ft. long, and about 2in. wide, bright green on both surfaces. Stem slender. *h.* 30ft. **Mauritius**, 1842. Whole plant unarmed. SYN. *Areca alba*.

Dictyosperma—*continued.*

D. aureum (golden).* *l.* pinnate, with long, narrow, distant, pendent, dark green leaflets. Seychelles Islands, 1868. A fine species, of erect habit, and with gracefully spreading leaves, remarkable for the yellow colour acquired by the petioles when grown in a temperate house SYN. *Areca aurea*.

FIG. 661. DIEFFENBACHIA CARDERI (see page 473).

D. furfuraceum (mealy) differs principally from *D. rubrum* in the tomentose character of the petiole and leaf sheath of the young plant. Mauritius. SYNS. *Areca furfuracea* and *A. pisifera*.

D. rubrum (red). Palmiste Rouge. *l.* dark green, with primary veins and margins dark red, the redness disappearing very much in adult plants. Branches of the spadix longer and more reflexed than in *D. album*. Mauritius. SYN. *Areca rubra*.

DICTYOXIPHIUM (from *dictyon*, a net, and *xiphos*, a sword; having sword-shaped fronds, with netted veins). ORD. *Filices*. A monotypic genus, allied to *Lindsaya*. Sori marginal, continuous. For culture, *see* **Ferns**.

D. panamense (Panaman). *fronds* tufted, sessile, 2ft. to 3ft. long; barren ones 2in. to 3in., fertile ones ½in. to 1in., broad, narrowed from the middle gradually downwards, quite entire. *sori* in a continuous marginal line. Tropical America.

DICYRTA (from *dis*, twice, and *kyrtos*, curved; the lower portion of the inside of the throat having two tubercular folds). ORD. *Gesneraceæ*. A genus containing two species of dwarf herbs, natives of Central America. Flowers white or pale lilac, often spotted, small. Leaves opposite, membranaceous, villous. For culture, *see* **Achimenes**.

D. candida (white). *fl.* white, solitary, axillary; the small corollas having a slightly curved tube, and an unequally five-lobed limb. July. *l.* opposite, on long petioles. *h.* 1½ft. 1848.

DIDISCUS. This genus is now included by Bentham and Hooker under **Trachymene** (which *see*).

DIDYMOCARPUS (from *didymos*, twin, and *karpos*, a fruit; in reference to the twin capsules). ORD. *Gesneraceæ*. A genus of about forty species of stove perennial, stemless or caulescent herbs, natives of tropical Asia. Flowers violaceous-blue or rarely yellow, disposed in dichotomous umbels; corolla funnel-shaped, with a ventricose throat. Leaves usually cordate, crenated, wrinkled, hairy. They succeed in a compost of peat, loam, and dried cow-dung, with the addition of a little sand. Propagated by cuttings, obtained from young shoots, when commencing growth; these should be placed in sandy soil, and in bottom heat.

D. crinita (hairy). *fl.* white, tinged with purple; tube incurved, swelling above; peduncles two to five together, axillary, one-flowered. July. *l.* alternate, 9in. to 10in. long, spathulate, acute, serrated, pilose, red. Stem short, thick, erect. *h.* 1ft. Pulo-Penang, 1845. (B. M. 4554.)

FIG. 662. DIEFFENBACHIA MAGNIFICA (see page 474).

D. Humboldtiana (Humboldt's). *fl.* pale lilac; panicle rather loose, five or six-flowered. October. A very neat and pretty little plant. (B. M. 4757.)

D. primulæfolia (Primrose-leaved).* *fl.* lilac: peduncles twin, many-flowered, and, as well as the calyces, pilose. November. *l.* cordate-oval, petiolate, twice crenated, wrinkled and silky on both surfaces. Stem downy, bearing four crowded leaves at top. *h.* 3in. to 6in. Ceylon, 1856. (B. M. 5161.)

DIDYMOCHLÆNA (from *didymos*, twin, and *chlaina*, a cloak; referring to the coverings of the sporecases). Including *Sphærostephanos*. ORD. *Filices*. A small genus of stove ferns, containing but the two species described below. Involucre elliptical, emarginate at the base, attached to the linear receptacle, free all round the edge. Sori elliptical, terminal on a veinlet, but distinctly intramarginal. For general culture, *see* **Ferns**.

Didymochlæna—*continued.*

D. lunulata (crescent-like).* *cau.* erect, sub-arborescent. *fronds* densely tufted, 4ft. to 6ft. long, bipinnate; pinnules ⅜in. to 1in. long, dimidiate, sub-quadrangular, entire, or slightly sinuated. *sori* two to six to a pinnule. Tropical America. SYN. *Aspidium truncatulum.*

D. polycarpa (many-fruited). *cau.* erect; rachis and lower surface villose. *fronds* tufted, short, 2ft. to 3ft. long, 1ft. to 1½ft. broad, simply pinnate; pinnæ close, very numerous, spreading, dwindling down below to mere auricles. *sori* small, close, ultimately confluent. Malaya. SYNS. *Mesochlæna polycarpa* and *Nephrodium javanicum.*

D. p. asplenioides (Asplenium-like) is a hairy form, with narrower pinnæ and short oblong-deltoid lobes.

DIDYMOSPERMA (from *didymos*, double, and *sperma*, a seed; in allusion to the (frequently) two-seeded fruits). ORD. *Palmæ.* A genus of unarmed stove palms. Flowers monœcious in the same or separate spadices; male with free or connate imbricate sepals; female with valvate petals; spadix flowering amongst the leaves; spathes usually many. For culture, *see* **Areca.**

D. nanum (dwarf).* *l.* about 2ft. long; petiole short, roundish; pinnules alternate or sub-opposite, cuneate towards the base, above this oblique, variously lobed, toothed and spinuloso-serrate, the terminal irregular in shape, generally bilobed, striately veined, green above, glaucous-white beneath. Assam and Khasia Mountains. SYN. *Wallichia nana.*

D. porphyrocarpon (purple-fruited). *l.* with petiole 4ft. to 8ft. long; segments nine to seventeen, wedge-shaped, sub-panduriform, sinuate, 6in. to 12in. long, 2in. to 5in. wide, glaucous beneath, caulescent. Rhizome underground, creeping. Java.

Didymosperma—*continued.*

D. tremulum (tremulous). *l.*, segments long, flat, firm, linear, spinuloso-dentate, bifid at the apex; laciniæ unequal or panduriform. Stem 3ft. to 4ft. high. Philippine Islands.

DIDYMOUS. Two; united, or in pairs.

DIDYNAMOUS. When (usually in a bilabiate flower) there are four stamens in two pairs, those of one pair longer than those of the other.

DIEFFENBACHIA (named in honour of Dr. Dieffenbach, a German botanist). ORD. *Aroideæ* (*Araceæ*). A genus of noble erect stove evergreen perennials, with often handsomely variegated foliage. Leaves usually green, sometimes irregularly marked with white or yellowish spots, oblong, with numerous veins diverging from the midrib.

FIG. 663. DIEFFENBACHIA NOBILIS (see page 474).

Stems fleshy, from 6ft. to 8ft. long. The poisonous and very acrid juice of this genus causes intense pain, and no part of the plant should, under any consideration, be placed in the mouth. For culture, *see* **Caladium.**

D. amœna (pleasing).* *l.* deep green, oblong-acute, marked with very abundant elongate blotches of white and pale yellow, which are well defined on both surfaces. Tropical America, 1880. Very effective. See page 469, Fig. 660, for which we are indebted to Mr. Wm. Bull.

D. antioquiensis (Antioquian). *l.* deep green, blotched with yellow. Columbia, 1875. (I. H. *n.* s. 192.)

D. Baraquiniana (Baraquin's).* *l.* bright light green, irregularly spotted with white, 6in. to 12in. long, 3in. to 6in. in width, oblong-acuminate; midrib pure white; petioles shining, clear

Dieffenbachia—*continued.*

ivory-white. *h.* 5ft. Brazil; 1863. SYN. *D. Verschaffeltii.* (I. H. 1864, 387.)

D. Bausei (Bause's).* *l.* yellowish-green, margined and irregularly blotched with dark green, and profusely spotted with white; broad, from 1ft. to 1½ft. long; petioles white. A garden hybrid. (I. H. n. s. 338.)

D. Bowmanni (Bowmann's). *l.* rich deep green, blotched with irregular parallel markings of a pretty light pea-green; very large, growing to a length of 2½ft., and having a breadth of about 1ft. Brazil, 1871. (I. H. xix. 105.)

D. brasiliensis (Brazilian).* *l.* dark green, suffusely spotted with blotches of white and pale green; oblong, acuminate. Brazil, 1872. A very distinct sort.

Dieffenbachia—*continued.*

D. eburnea (ivory).* *l.* delicate light green, profusely dotted and spotted with white; oblong-lanceolate. Stems and footstalks stained with pale cinnamon, and ribbed with ivory-white. Brazil, 1868. A very pretty species, with a close and compact habit.

D. gigantea (gigantic). *l.* spotted with cream-colour. Stems white, prettily mottled with light green spots. Brazil, 1864. A fine bold-growing plant. (I. H. 470.)

D. grandis (large). *l.* green, mottled. Brazil, 1864.

D. imperator (commanding). *l.*, ground colour olive-green, fantastically blotched, marbled, and spotted with pale yellow and white; 1½ft. to 1½ft. in length by 5in. in breadth, ovate-lanceolate. Columbia.

FIG. 664. DIEFFENBACHIA REGINA (see page 474).

D. Carderi (Carder's). *l.* rich dark green, strikingly blotched and variegated; oblong-ovate, somewhat deflexed. Columbia, 1880. See page 470, Fig. 661, for which we are indebted to Mr. Wm. Bull.

D. chelsoni (Chelsea).* *l.* dark satiny-green, the midrib marked with a grey band, which runs out into a feathered edge, and extends about one-third across each half of the blade, the surface of which is also freely spotted and blotched with bright yellow-green for about two-thirds of its breadth. Columbia, 1877. A very handsome species.

D. costata (ribbed). *l.* deep velvety-green, with distinct ivory-white midrib, more or less profusely spotted with oblong ivory-white blotches; ovate, blunt at the base, undulated at the edge, acuminate at the apex, about 9in. long. Columbia, 1860.

D. delecta (select). *l.*, surface satiny, with whitish variegation; elliptic-lanceolate, 8in. to 10in. long, spreading. Stems mottled green. Columbia, 1880.

D. imperialis (imperial). *l.* dark green, with yellow spots; midrib greyish. South America, 1871. (I. H. 1871, 85.)

D. insignis (remarkable). *l.* dark green, with irregular angular blotches of pale yellowish-green; 6in. or more in breadth, obliquely ovate, shortly acuminate; petioles pale green. Columbia.

D. latimaculata (broad-spotted).* *l.* dark glaucous-green, interspersed with white bars, spotted and blotched irregularly with yellowish-green; somewhat acute-sagittate; petioles glaucous. Stem erect, supporting a fine crown of leaves. Brazil, 1871. (I. H. 112.) A variety, named *illustris* (I. H. 234), has the leaves banded with yellow, green, and grey, on a ground of deep green. 1876.

D. Leopoldi (Leopold's).* *l.* of a rich deep lustrous satiny-green, oblong-ovate; midrib broad, ivory-white, bordered on each side with a whitish band. South America. A very fine species, described as of resplendent beauty. (G. C. n. s., ix. 441.)

Dieffenbachia—*continued.*

D. maculosa (spotted). *l.* blotched with creamy-white. Columbia, 1876.

D. magnifica (magnificent).* *l.* shining, sombre green, thickly variegated (following the direction of the secondary nerves) with blotches and spots of white. Stem and petioles also variegated; the latter are short and sheathing. Venezuela. See page 471, Fig. 662.

D. majestica (majestic).* *l.* rich dark green, variegated with scattered bright yellowish blotches, and having besides a feathery silver bar along the central line; oblong-ovate, acuminate, 1ft. or more in length, and 5in. to 6in. in breadth. 1882. Very distinct, and stocky in habit.

D. nitida (shining). *l* deep glossy green, marked with angular blotches of bright yellowish-green; oblong-lanceolate, acuminate. Stems erect. Columbia.

D. nobilis (noble).* *l.* deep rich green, profusely blotched and spotted with white, except at the edges, where the ground colour forms a broad marginal band; oblong-ovate, about 1½ft. long, and 9in. broad; petioles thick and channelled, pale green, transversely banded with a different shade of the same colour, nearly 1ft. long. Brazil, 1869. See page 472, Fig. 663. (G. C. 1873, 815.)

D. Parlatorei marmorea (Parlatore's marbled). *l.* blotched with greenish-white. Antioquia, 1878. (I. H. n. s. 201.)

D. Pearcei (Pearce's). *l.* bright light green, profusely spotted and blotched with creamy-white, each side of the midrib with a band of the same colour; large, oblong-lanceolate. Ecuador.

D. picta (spotted). *l.* spotted with white. Tropical America, 1820.

D. princeps (illustrious).* *l.* dark green, with a few scattered

Dieffenbachia—*continued.*

yellowish spots, and a silver-grey marking running through the centre; somewhat oblique, the narrower side being most distinctly cordate. Brazil, 1868.

D. Regina (Queen).* *l.* oblong-elliptic, rounded at the base, shortly acuminate, almost wholly covered with greenish-white, mottled with blotches of pale green, and having a narrow margin, and a few streaky markings of a deeper shade; the greater portion of the upper surface of the leaf-blade, whose two sides are nearly equal in breadth, is of this pallid hue, with the few but distinct dark markings. South America. This beautiful plant is a very distinct and striking addition to the genus. See preceding page, Fig. 664, for which we are indebted to Mr. Wm. Bull.

FIG. 665. DIEFFENBACHIA REX.

D. Rex (King).* *l.* closely placed on the stem; leaf-blades elliptic-lanceolate, unequal-sided, of a very deep green colour, passing to paler green near the edge of the narrow side, the whole surface, to within about ½in. of the margin, thickly covered with oblique-elongate angular white blotches, which take the same direction as the venation, and are here and there slightly veined and suffused with green. South America. A very handsomely marked plant, of free and vigorous habit. See Fig. 665, for which we are indebted to Mr. Wm. Bull.

D. Seguine (Seguine). Dumb Cane. *l.* deep green, marked with pellucid white spots, ovate-oblong, cuspidate, undulated. *h.* 6ft. West Indies.

D. Shuttleworthii (Shuttleworth's). *l.* with a feathery white band along the midrib. Columbia, 1878. (G. C. n. s., x. 45.)

D. splendens (splendid). *l.* of a rich deep velvety bottle-green, freely marked with whitish striated blotches, which stand out in striking contrast with the deep green ground colour. Stem faintly mottled with dark and light green. Columbia, 1880.

Dieffenbachia—*continued.*

D. triumphans (triumphant). *l.* dark green, covered with large, irregular, angular, yellowish-green blotches, somewhat spreading, ovate-lanceolate, attenuately acuminate, about 1ft. long, and 4in to 5in. wide. Columbia. A very ornamental species.

D. velutina (velvety). *l.* satiny-green; petioles white. Columbia, 1877.

D. Verschaffeltii (Verschaffelt's). A synonym of *D. Baraquiniana.*

D. vittata (striped). *l.* greyish-green, with two feathery white bands. Tolima.

D. Wallisii (Wallis's).* *l.* ovate-lanceolate, of a rich dark green, marked along the midrib with broad feathery bands of a light grey, ornamented with irregular blotches of the same colour towards the margin. Columbia, 1870. (I. H. 1870, 11.)

D. Weirii (Weir's). *l.* bright green, thickly blotched and spotted with pale yellow. Brazil, 1866. A fine species, of dwarf habit.

DIELYTRA. This name, by an erroneous conjecture, was changed from *Diclytra*, in the first instance accidentally printed for **Dicentra** (which *see*).

DIERAMA. *See* **Sparaxis pendula** and **S. pulcherrima.**

DIERVILLA (named in honour of M. Dierville, a French surgeon). SYN. *Weigelia.* ORD. *Caprifoliaceæ.* A genus of very handsome hardy shrubs. Flowers white, purple, pink, or yellow, in axillary and terminal clusters; corolla funnel-shaped or campanulate; tube regular. Leaves opposite, sessile, or petiolate, serrated. These elegant shrubs are of very easy culture in common garden soil, if the situation is a rather moist and shaded one. Propagation may be readily effected by cuttings, made in spring or autumn, or by the freely-produced suckers. The gracefully spreading form of Diervillas renders them remarkably well adapted for shrubberies; and *D. grandiflora*, in particular, can be very successfully grown as a wall-plant.

FIG. 666. DIERVILLA ROSEA.

D. amabilis (lovely). A synonym of *D. grandiflora.*

D. canadensis (Canadian). A synonym of *D. trifida.*

D. floribunda (many-flowered). *fl.*, corollas purplish, narrow, tubular, only slightly expanded towards the mouth. June. *h.* 3ft. Japan, 1864. SYN. *D. multiflora.* (I. H. 383.)

D. grandiflora (large-flowered).* *fl.* pink. Early summer. *l.* strongly reticulated, the veins being very prominent on the under side. *h.* 8ft. Japan. SYN. *D. amabilis.* (F. d. S. 855.) There are several very ornamental varieties: *Isolinæ*, flowers white, with a yellow blotch in the throat (F. d. S. 1445); *striata*, striped red and white (F. d. S. 1446); and *Van Houttei*, white and rose, very showy (F. d. S. 1447); another variety, *variegata*, has prettily variegated leaves (F. d. S. 1189).

D. hortensis (garden). *fl.* red or white; corolla tube slender, slightly hairy outside, glabrous within; limb regular, with spreading ovate lobes. *l.* stalked, ovate, acuminate, crenate, or crenate-serrulate, softly hairy. *h.* 4ft. to 5ft. Japan. (S. Z. F. J. 29.)

D. Middendorffiana (Middendorf's). *fl.* yellowish-white, dotted with pink on the lower petal; panicles terminal. *l.* nearly sessile, ovate-lanceolate, finely reticulated, hairy on the nerves. Siberia.

D. multiflora (many-flowered). A synonym of *D. floribunda.*

D. rosea (rose).* *fl.* rosy or white, very numerously produced. Spring. *l.* ovate-lanceolate, serrulate. *h.* 6ft. China, 1844. See Fig. 666. Of this widely-grown species, there are several excellent varieties: *nana* is a very compact, dwarf-growing form: *nana aurea* is like *nana*, except that the foliage (particularly in a young state) is a rich golden colour; *Stelzneri* is a very floriferous purplish-red form.

Diervilla—*continued.*

D. trifida (trifid). *fl.* yellow. Summer. *l.* on short petioles, ovate, acuminated, serrated, and, as well as the petioles, glabrous. Root creeping. *h.* 3ft. to 4ft. North America, 1739. SYN *D. canadensis.*

DIFFUSE. Scattered; widely spread.

DIGGING. For pulverisation and mixing-in of manures, Digging is best performed (says London) in dry weather; but, for the purpose of aëration, a degree of moisture and tenacity in the soil is more favourable. In Digging, a uniform depth should be preserved throughout, the full length of the spade being inserted nearly vertically, and the spit turned over, so that what was before underneath may now be exposed to the air. An open trench, the length of the ground to be dug, should first be made, and the soil thus removed transferred to the place where it is intended to finish. In order to leave the surface, when completed, evenly disposed, the trench must be kept tolerably straight, and of about an even width. Ground that has been occupied by garden crops in summer, is best thoroughly dug in the autumn, and manure added. It should not be broken by the spade, but left rough for full exposure to the frost, and for the consequent aëration in winter. The following spring, such soil will be found to work well, and may be prepared, by levelling down, for any desired crop. The strength of the manure will also have become incorporated with the soil underneath—a condition that cannot be obtained by adding it at planting time. The width of ground taken as a spit must not exceed about 9in. in heavy soils, or the bottom will be left undisturbed. Digging is best performed when the soil is somewhat dry, and should never be practised when it is frozen or covered with snow. Light soils, or those resting on a gravelly bottom, may be worked at many times when it would be very unwise to tread on those of a clayey nature. The workman, when Digging, should stand nearly erect, insert the spade vertically, to secure the removal of soil to the full depth, and turn the spit from the direction in which he is standing. If a competent man, he will be able to reverse the position of his hands on the spade, and proceed either way with equal facility.

Double-digging is performed by having a trench of double width, removing a spit of the earth on the top, then Digging underneath, and allowing that portion to remain. Another width is then marked out, the top soil from this placed on the other, and each portion treated successively in a similar manner. This method is often adopted where sub-soils are poor, so that the depth of two spits may be reached, without introducing the inferior soil to the surface.

DIGITALIS (from *digitus*, a finger; referring to the shape of the flowers). Foxglove. ORD. *Scrophularineæ.* A genus of eighteen species of very showy hardy biennial or perennial herbs, confined to Europe, North Africa, and West Asia. Flowers purple, yellowish, or white, disposed in long terminal, sometimes secund, racemes; corolla tubular at the base, funnel-shaped; limb obliquely four-lobed; upper segment much shorter than the lower one or lip, and, as well as that, imbricate in æstivation. The culture of this genus is very simple; the plants thriving in any ordinary garden soil. Seeds should be sown in April or May, and the seedlings, when large enough to handle, may be planted out 6in. apart. Also increased by divisions.

D. ambigua (ambiguous).* *fl.* yellowish, reticulated with brown, large, 2in. long; lower bracts about equal in length to the flowers. July, August. *l.* ovate-lanceolate, toothed, sessile, nerved, downy beneath. *h.* 2ft. to 3ft. Europe, 1596. Perennial. Plant hairy. SYNS. *D. grandiflora* and *D. ochroleuca.* (B. R. 64.)

D. a. fuscescens (dark brown). A variety with brown flowers, which are smaller than those of the type.

D. aurea (golden). A synonym of *D. ferruginea.*

D. dubia (doubtful). *fl.*, corolla purplish, large for the size of the plant, marked by many spots inside; throat dilated; racemes

Digitalis—*continued.*

few-flowered. June. *l.* glabrous above, downy beneath; radical ones recurved to the ground, lanceolate, flat, denticulated; upper ones quite entire. *h.* 6in. to 9in. Spain, 1789. Perennial. SYN. *D. minor.* (B. M. 2160.)

D. ferruginea (rusty). *fl.* rusty, reticulated inside, downy outside; lip of corolla ovate, entire, bearded; racemes long, dense, pyramidal. July. *l.* glabrous or ciliated. Stem glabrous, densely leafy. *h.* 4ft. to 6ft. Europe, 1597. Biennial. SYN. *D. aurea.* (B. M. 1828.)

D. grandiflora (large-flowered). A synonym of *D. ambigua.*

D. laciniata (jagged-leaved). *fl.*, corolla yellow, downy, with ovate, bearded segments; raceme sub-secund; bracts all much shorter than the pedicels. June. *l.*, lanceolate, jagged, glabrous. *h.* 1½ft. to 2ft. Spain, 1827. Perennial. (B. R. 1201.)

D. lævigata (smooth). *fl.* scattered, glabrous; corolla fulvous, reticulated; lip white, ciliated. July. *l.* linear-lanceolate; radical ones obovate-lanceolate, obscurely-toothed; upper ones recurved. *h.* 2ft. to 3ft. Europe, 1816. Perennial. (B. M. 5999.)

D. lanata (woolly). *fl.*, corolla grey, downy, reticulated; lip white, sometimes purplish, naked; racemes dense, many-flowered; bracts shorter than the flowers. July, August. *l.* deep green, oblong, ciliated. *h.* 2ft. to 3ft. Eastern Europe, 1789. Perennial. (B. M. 1159.)

D. mariana (Sierra Morena). *fl.* rose-coloured; corolla bearded on the lower part inside with long white hairs, where they are marked with brownish-red spots. Summer. *l.* mostly radical, ovate-oblong, very downy on both sides. *h.* 1½ft. Spain. Perennial.

FIG. 667. UPPER PORTION OF PLANT OF DIGITALIS PURPUREA.

Digitalis—*continued.*

D. minor (smaller). A synonym of *D. dubia.*

D. ochroleuca (yellowish-white). A synonym of *D. ambigua.*

D. purpurea (purple).* Common Foxglove. *fl.* purple, marked inside with dark purple spots, which are edged with white, large, disposed in a dense terminal raceme. Summer. *l.* oblong, rugose, crenated. *h.* 3ft. to 5ft. A very handsome biennial, the colour of the flowers varying from cream to white. Western Europe (Britain). See Fig. 667.

D. Thapsi (Thapsi). *fl.*, corolla limb purple; throat pale, marked with blood-red dots. June to September. *l.* oblong, rugose, crenated, undulated, decurrent. *h.* 2ft. to 4ft. Western Europe, 1752. Perennial. Plant tomentose, in habit much like *D. purpurea.*

DIGITARIA. Included under *Panicum.*

DIGITATE. Fingered; shaped like the open hand; when several distinct leaflets radiate from the point of a leafstalk.

DILATED. Widened.

DILATRIS (from *dilato*, to open wide; referring to the opening of the flower). ORD. *Hæmodoraceæ.* A genus of greenhouse herbaceous plants, containing a couple of species, natives of the Cape of Good Hope. Flowers purple or yellow, corymbose or panicled; perianth petaloid, externally downy, superior, six-parted, the segments erect, persistent. Leaves radical, equitant, ensiform, rigid, sheathing at the base. For culture, *see* **Anigozanthus.**

D. corymbosa (corymbose). *fl.* purple; corymb level-topped, hairy. *h.* 1ft. 1790.

D. viscosa (clammy). *fl.* blue; corymb level-topped, villous, viscid. *h.* 9in. 1795.

DILL (*Anethum graveolens*). A herb rarely grown in this country. It is used for flavouring soups, sauces, &c., for which purpose the young leaves only are required. It is of very easy culture. Seeds may be sown broadcast, or in drills, about March or April, in any ordinary garden soil; and, if the flower-stalks are allowed to remain and seed each year, plenty of plants will always be produced. The genus *Anethum* is now included, by Bentham and Hooker, under *Peucedanum.*

DILLENIA (named after John James Dillenius, a former Professor of Botany, at Oxford, author of "Historia Muscorum," and "Hortus Elthamensis.") Including *Colbertia.* ORD. *Dilleniaceæ.* A genus of less than a score species of very beautiful stove evergreen trees, with large flowers; they are only suited to places where plenty of room can be afforded. They thrive in a light sandy loam. Cuttings of half-ripened wood root readily, if inserted in sand, under a glass, in bottom heat. Seeds are sometimes imported, and are usually found to grow without much difficulty.

D. pentagyna (five-carpelled). *fl.* yellow; petals ovate-oblong, acute; pedicels one-flowered, clustered along the naked branches of the preceding year. March. *l.* oblong, villous on the nerves beneath. *h.* 20ft. India, 1803. SYN. *Colbertia coromandelina.*

D. scabrella (roughish). *fl.* yellow, fragrant; petals orbicular, or obovate; peduncles in axillary fascicles, each furnished with two opposite bracts, glabrous. *l.* elliptical, acute, 1ft. long, tapering to the base, pilose on both surfaces, with bristly serratures. Assam and Sylhet, 1820. A spreading tree.

D. speciosa (showy). *fl.* white, with yellow stamens, 9in. in diameter; peduncles one-flowered. *l.* very ornamental, elliptical-oblong, simply serrated, 6in. to 1ft. long, bright light green. *h.* 40ft. East India, 1800. One of the handsomest of Indian trees, whether the beautiful foliage is considered, or the size and structure of the flowers. In this country, however, it is a rather spreading bush. (B. M. 5016.)

DILLENIACEÆ. A rather large order of trees, shrubs, or suffruticose herbs, allied to the Magnoliads. Flowers yellow or white, often very showy, hermaphrodite or polygamous, rarely dioecious; sepals five (rarely three, four, or numerous), persistent, in two rows; petals five, or fewer, deciduous. Fruit consisting of two or five distinct or united carpels. There are about seventeen genera and 200 species, chiefly found in Australia, India, and North America. Some are large timber trees, while others are fruit-producing. Well-known genera are: *Candollea, Delima, Dillenia,* and *Tetracera.*

DILLWYNIA (named in honour of Lewis Weston Dillwyn, a botanist whose labours were more especially directed to the British *Confervæ*; born 1778, died 1855). ORD. *Leguminosæ*. A genus of elegant greenhouse evergreen Heath-like shrubs. Flowers yellow or orange-red, few together, in axillary or terminal racemes or corymbs, rarely solitary; petals clawed. Leaves alternate or scattered, simple, narrow-linear, or terete, channelled above; stipules wanting. There are about half-a-score species, all natives of Australia. For culture, *see* **Chorizema.**

D. ericifolia (Heath-leaved).* *fl.* yellow, in very short racemes or clusters, sometimes several together, almost sessile, in a terminal leafy corymb; petals deciduous; calyx glabrous. May. *l.* numerous, rather slender, usually ¼in. to ½in. long, but sometimes twisted when dry, obtuse, with a short, recurved or straight, but scarcely pungent, point. 1794. There are various forms of this plant, which have been generally recognised as species; the following are the most prominent: *glaberrima* (B. M. 944), *parvifolia* (B. M. 1527), *pedunculatis*, *phylicoides*, and *tenuifolia*.

D. floribunda (bundle-flowered). *fl.* yellow, crowded, axillary, twin. April. *l.* crowded, subulate, mucronulate, scabrous from tubercles. *h.* 2ft. to 6ft. 1794. SYN. *D. rudis*. (B. M. 1545, under the name of *D. ericifolia*.)

D. glycinifolia (Glycine-leaved). A synonym of *Chorizema angustifolium*.

D. hispida (hairy).* *fl.* disposed in terminal heads upon numerous side shoots; corolla deep purple-red; standard and wings red. May. *l.* long, obtuse or scarcely-pointed, not twisted, and without any prominent keel. *h.* 3ft. to 6ft. SYN. *D. scabra*. (L. J. F. 296.)

D. juniperina (Juniper-leaved). *fl.*, corolla orange-coloured, with the vexillum and wings streaked in their lower part with red; heads of flowers terminal; pedicels bibracteate. March. *l.* nearly filiform, smooth, ending in a pungent point, spreading, straight, serrated. *h.* 1ft. to 3ft. 1818. (L. B. C. 401.)

D. rudis (rustic). A synonym of *D. floribunda*.

D. scabra (rough). A synonym of *D. hispida*.

DIMIDIATE. Divided into two unequal parts.

DIMORPHANTHUS (from *dimorphos*, two-formed; in allusion to there being two kinds of flowers, perfect and sterile). ORD. *Araliaceæ*. This genus is now included under *Aralia*, and the species described below is in reality merely a variety of *A. chinensis*. A very handsome hardy shrub, of erect habit, with very large, much-divided, spiny leaves. This remarkably fine foliage plant requires a sheltered, but sunny, spot, where it will fully develop its beauty. For sub-tropical gardening it is very useful. It requires similar cultivation to **Aralia** (which *see*).

FIG. 668. DIMORPHANTHUS MANDSCHURICUS, showing Flowering Branch, detached portion of Inflorescence, and single Leaflet.

D. mandschuricus (Manchurian).* *l.* from 3ft. to 5ft. long, and nearly as much in width, bipinnate, very hairy and prickly. *h.* 6ft. to 10ft. Manchuria, 1866. Deciduous. See Fig. 668.

DIMORPHISM. A state in which two forms of flower or leaf are produced by the same species.

FIG. 669. DIONÆA MUSCIPULA (see page 478).

DIMORPHOTHECA (from *dimorphos*, two-formed, and *theca*, a receptacle; disk-florets of two forms). ORD. *Compositæ*. A genus of about twenty species of smooth, hairy, or glandular annual herbs or shrubby perennials, natives of South Africa. Flower-heads long-stalked; disk orange-yellow or purplish; ray the same colours or white. Leaves radical or alternate, entire, toothed, or cut, often narrow. These half-hardy plants grow freely in well-drained loam; they are suitable for open air cultivation during summer, and for cool greenhouse in winter. The annual sorts should be sown in heat, under glass, in spring, and planted out at the end of May. The perennials are readily grown from cuttings.

D. Barberiæ (Mrs. Barber's). A purple-flowered greenhouse plant, from Caffraria, 1862. Perennial. SYN. *D. lilacina*. (B. M. 5337.)

D. chrysanthemifolia (Chrysanthemum-leaved). *fl.-heads* yellow, large, opening about eleven in the forenoon, and closing again by three or four in the afternoon. April to July. *l.* ob-ovate, sub-lyrate, roughish. Stem suffruticose, erect. *h.* 2ft. 1790. SYN. *Calendula chrysanthemifolia* (under which name it is figured in B. M. 2218).

D. cuneata (wedge-leaved). *fl.-heads* (both disk and ray) orange. *l.* cuneate or lanceolate, coarsely toothed, nearly glabrous, gland-dotted. *h.* 2ft. to 3ft. A beautiful much-branched greenhouse shrub. SYN. *Arctotis glutinosa*. (B. M. 1343.)

D. graminifolia (grassy-leaved). *fl.-heads* 2½in. across, hand-some, on long terminal peduncles; ray-florets white above, orange-brown beneath; disk-florets deep purple, dotted with the yellow of the anthers. April. *l.* linear, or linear sub-spathulate,

Dimorphotheca—*continued.*

from 3in. to 5in. long, entire or slightly toothed. Stem between herbaceous and woody, weak, terete, green, varying in length, simple or slightly branched. *h.* 1ft. to 2ft. 1861. A rather straggling plant. SYN. *Calendula graminifolia.* (B. M. 5252.)

D. lilacina (lilac). A synonym of *D. Barberiæ.*

D. Tragus (Tragus). *fl.* white, purple, opening in the morning and closing again in the afternoon. May, June. *l.* linear, somewhat toothleted, muricate, dotted beneath. Stem suffruticose. *h.* 2ft. 1774. SYN. *Calendula Tragus* var. (under which name it is figured in B. M. 1981).

DINETUS. *See* **Porana.**

DIŒCIOUS. When a plant bears female flowers on one individual, and males on another.

DIONÆA (from Dionæa, a surname of Venus, as the supposed daughter of Jupiter and Dione). ORD. *Droseraceæ.* A dwarf, exceedingly interesting, herbaceous perennial. It thrives in a mixture of peat and living sphagnum. The pot containing it should be placed in a pan of water, and stood near the glass in the greenhouse, or even in a cold frame. Propagated by division of the plant, or sometimes by seed.

D. muscipula (fly-catcher).* Venus's Fly-trap. *fl.* white, in terminal corymbs. July and August. *l.* radical, on long footstalks, which are dilated at the top into a two-lobed irritable limb, beset with one row of long hairs on the margin, folding together, in the manner of the teeth of a trap. *h.* 3in. to 6in. Carolina and Florida, 1768. The seat of irritation resides in the three bristles which are placed in the centre of each lobe; on these being touched, movement immediately takes place. See Fig. 669, page 477. (B. M. 785.)

FIG. 670. DIOSCOREA BATATAS.

DIOON (from *dis*, two, and *oon*, an egg; in reference to each scale bearing two ovules; otherwise from the seeds being borne in twos). SYN. *Platyzamia.* ORD. *Cycadaceæ.* A very singular genus containing a couple of species, both natives of Mexico. They make noble objects in a collection of ornamental-leaved plants. Dioons thrive best in a compost of good loam and river sand, and succeed well in an ordinary greenhouse, except when in a growing state, at which period they should have the warmth of a stove. Propagated by seed, which are very large. Miquel observes that this genus is more closely allied to certain fossil *Cycadaceæ* than is any other living representative of the order.

D. edule (edible).* *l.* glaucous-green, pinnate, from 3ft. to 6ft. in length, and 6in. to 7in. in breadth, tapering towards the base, where they are clothed with short white woolly hairs; texture very firm. Stems about 3ft. in circumference. *h.* 3ft. 1844. (B. M. 6184.) The fruit of this plant is as large as a chestnut, and is powdered by the natives, and formed into a kind of arrowroot.

DIOSCOREA (named after Dioscorides, a native of Anazauba, in Cilicia, who lived in the age of Nero; his celebrated book upon medicinal herbs was the foundation of almost all botanical knowledge until modern times). Yam. ORD. *Dioscoreaceæ.* Very ornamental-leaved (with few exceptions) stove herbaceous climbers, with large tuberous roots, admirably adapted as trellis or pillar plants. Flowers whitish or yellowish, inconspicuous. Leaves broad, cordate, or angular.

Dioscorea—*continued.*

In the winter months, Dioscoreas should be kept in a cool (but not cold) place, either in the pots or in some perfectly dry sand. The most suitable soil is a rich light compost, formed of turfy loam and well-decomposed manure, in about equal parts. They should have abundance of root room, and be liberally supplied with water during the growing season, gradually diminishing the quantity as the shoots show signs of decay. Propagated by divisions of the tubers, which may be effected either in autumn or spring, while they are at rest, but never when growing.

D. Anœctochilus (Anœctochilus-like). *l.* deep olive-green, beautifully marbled with gold, with a central band of the same colour, broadly acuminate; when young, they are of a uniform plain bright green. South America, 1865.

D. argyræa (silvery). *l.* green, cordate, about 5in. across, seven-nerved; nerves bordered with distinct irregular angular patches of silvery-grey. Columbia.

D. Batatas (Batatas).* Chinese Yam. *fl.* white, diœcious, very small, in axillary racemes, generally sterile. *l.* deep green, very glossy, opposite, cordate, acuminate. Stems annual, smooth, green or purplish, sometimes attaining a height of from 6ft. to 9ft. The roots are used like potatoes—boiled, roasted, and cooked in various other ways. Probably the great depth to which the tubers descend, and the consequent expense of harvesting the crop, has prevented this useful hardy vegetable from being much cultivated in this country. See Fig. 670.

D. bulbifera (bulb-bearing).* *fl.* greenish, disposed in gracefully drooping racemes. *l.* broad, cordate. East Indies, 1692. A very old inhabitant of our stoves, and at one time strongly recommended as a substitute for the potato. (G. C. n. s., viii. 48.)

FIG. 671. TUBERS OF DIOSCOREA DECAISNEANA.

D. Decaisneana (Decaisne's). Decaisne's Yam. *l.* very light green, opposite or alternate, deeply cordate at base, regularly narrowed to the apex. Tubers in some cases smooth and regularly shaped, as in some varieties of potato, others very irregular. China, 1862. Perhaps this is a variety of *D. Batatas*, from which it, however, differs a good deal in the tubers not being developed at such a great depth underground. See Fig. 671.

D. discolor (two-coloured). *l.* beautifully mottled with two or three shades of green, large, cordate; under surface rich purplish-crimson. Tropical America.

D. illustrata (illuminated). *l.* satiny-green, marked by fine transverse whitish parallel lines between the nerves, with an irregular central band of silvery-grey, and a few angular patches of the same colour, generally placed in juxtaposition with the ribs; about 6in. long, produced at the base into two bluntish lobes; under surface purple. Brazil, 1873. (G. C. 1873, 1730.)

D. multicolor (many-coloured).* *l.* rich green, beautifully spotted and variegated with pale spots and blotches, most numerous near the principal veins; cordate, 3in. to 5in. long, and 2½in. to 3in. wide; under surface pale lurid purple. Rio Negro, 1868. (I. H. 1871, 53.) There are about half-a-dozen varieties of this species known, of which the following are in cultivation: *chrysophylla*, leaves olive-brown, variegated with yellow; *Eldorado*, leaves satiny-green, with silvery-grey central band, and irregular blotches of the same colour; *melanoleuca*, leaves deep green, with central silvery band and silvery blotches along the veins; *metallica*, leaves bronzy, with coppery central band.

D. nobilis (noble). *l.* velvety-bronze, variegated with yellow. Brazil, 1868.

D. retusa (retuse). *fl.* dull yellowish; racemes axillary, slender, pendulous, many-flowered. *l.* alternate, loosely scattered, digitate; leaflets five to seven, petiolulate. South Africa, 1870. (G. C. 1881, xv. 511.)

D. sativa (cultivated). Common cultivated Yam. *l.* alternate, cordate, round, ovate, cuspidate; lobes of base close together. Stem smooth, round, slender. West Indies, 1733.

D. vittata (striped). *l.* flushed with claret-colour beneath, or variegated with red and white on both sides, large, cordate. (B. M. 6409.)

DIOSCOREACEÆ. A natural order of twining shrubs or herbs, found chiefly in tropical countries. Flowers in spikes, small; perianth of males six-cleft; lobes in two rows, herbaceous and adnate; stamens six, inserted in the base of the perianth. Female flowers with a six-cleft or six-partite perianth; staminodes small, three to six. Most of the Dioscoreas produce tubers (known as Yams), which are used as food, in the same way as potatoes. *Dioscorea* is the typical genus. The order is represented in Britain by the Black Bryony, *Tamus communis*.

DIOSMA (from *dios*, divine, and *osme*, smell; well-bruised leaves have an exquisite smell). ORD. *Rutaceæ*. A genus of about a dozen species of small greenhouse Heath-like shrubs, all natives of South Africa. Flowers white or reddish, terminal, sub-solitary or corymbose; calyx five-parted; petals sessile, obovate, longer than the calyx. Leaves alternate or opposite, linear-acute, channelled, serrulated or ciliate, gland-dotted. Diosmas may be very easily raised from cuttings, inserted in sandy peat, covered with a bell glass, and placed in very gentle heat. They will soon root, and may then be transferred singly into thumb pots, and afterwards, by successive stages, into larger ones. It will be desirable to keep the plants a little in shape by stopping the most vigorous branches, thus causing a lateral growth. Diosmas succeed in fibry peat and sand, and also in the same compost, with the addition of a little fibrous loam.

D. ericoides (Heath-like).* *fl.* white, with a tinge of red on the upper surface, small, terminal, two or three together. February to July. *l.* crowded, trigonal, blunt, smooth, dotted, emitting a strong penetrating smell when bruised. *h.* 1ft. to 3ft. 1756.

FIG. 672. FLOWERING BRANCH OF DIOSMA VULGARIS

D. vulgaris (common). *fl.* white, tinged with blue; corymbs terminal, few-flowered. May. *l.* scattered, linear, pointed, long, smooth, glandular, spreading, fringed. *h.* 1ft. to 3ft. See Fig. 672. (B. M. 2332, under name of *D. ericoides*.)

The other species are rarely seen in cultivation.

DIOSPYROS (the old Greek name used by Theophrastus, from *dios*, divine, and *puros*, wheat; literally celestial food). Date Plum. ORD. *Ebenaceæ*. A genus of about 150 species of stove, greenhouse, or hardy trees and shrubs, represented in nearly all temperate and tropical regions. Flowers inconspicuous, polygamous, axillary. Leaves simple, alternate, entire, exstipulate. The greenhouse species are ornamental, and thrive under ordinary treatment; they are propagated by cuttings of half-ripened shoots. Those requiring stove heat strike best from ripened shoots, made during April or May, placed in sand, and in a brisk bottom heat. The hardy species may be increased by seeds.

Diospyros—*continued*.

D. Ebenus. Ebony. *fl.* white; male ones sub-racemose; hermaphrodite ones solitary. *l.* bifarious, ovate-lanceolate or oblong, acuminated, glabrous. *h.* 30ft. to 40ft. 1792. Stove. (B. F. S. 65.)

FIG. 673. FRUIT AND LEAVES OF DIOSPYROS KAKI.

D. Kaki (Kaki).* *fl.* whitish-green; male peduncles usually three-flowered. *fr.* yellow when ripe, globose, eight-celled, size of a small orange, abounding in yellow, fleshy, edible pulp; it is tolerably pleasant. *l.* bifarious, ovate-elliptic, acuminated, elliptic-oblong or obovate, cordate at the base, downy on both surfaces. Branches tomentose. *h.* 12ft. to 20ft. China, 1789. Hardy in South of England and Channel Islands, &c. See Fig. 673. The variety *costata* (G. C. n. s., iv. 777) is so named in consequence of the depressed lines or ribs that mark the surface of the fruit from the apex down towards the enlarged persistent four-lobed calyx at the base. The name of Date Plum is, perhaps, more frequently used for this species than for any of the others.

D. Lotus.* European Lotus, or common Date Plum. *fl.* reddish-white, small. July. *fr.* yellow when ripe, sweet with astringency, size of a cherry. *l.* oblong, acuminate, of a beautiful dark glossy green above; when mature, and exposed to the air, they assume a purplish hue beneath; they do not change colour in autumn, but drop off simultaneously with the first attack of sharp frost. *h.* 20ft. to 30ft. South Europe, Orient, 1596. Hardy.

D. Mazeli (Mazel's).* *fr.* orange-red, large, spherical, ripe in November. *l.* elliptic-ovate or sub-cordate, deciduous. Japan, 1874. (R. H. 1874, 70.)

D. virginiana (Virginian).* Persimmon; Virginian Date Plum. *fl.* pale yellow. July. *fr.* golden-yellow, size and form of a common Plum. *l.* ovate-oblong, acuminated, glabrous, shining above, and paler beneath, reticulately veined; petioles short and curved, and, as well as the branchlets, downy. *h.* 20ft. to 30ft. North America, 1629. Hardy.

DIOTIS (from *dis*, two, and *ous*, *otos*, an ear; alluding to the ear-like lobes of the corolla). Cotton Weed. ORD. *Compositæ*. A very ornamental hardy perennial, with a white and cottony aspect. It forms an excellent edging or rockery plant, and is increased by cuttings or seeds.

D. candidissima (whitest). A synonym of *D. maritima*.

D. maritima (sea).* *fl.-heads* yellow, sub-globose, discoid. *l.* alternate, oblong, entire or toothed, densely covered with white felted wool. Rootstock creeping, woody. *h.* 6in. to 1ft. South of England (rare), shores of the Mediterranean and the Canaries. SYN. *D. candidissima*. (Sy. En. B. 725.)

DIPCADI (derivation obscure). SYNS. *Polemannia*, *Tricharis*, *Uropetalum*, and *Zuccagnia*. ORD. *Liliaceæ*. A genus of pretty hardy and half-hardy bulbs, allied to *Galtonia*. There are about a score of species, natives of South Europe, tropical and Southern

Dipcadi—*continued.*

Africa, and East Indies. Flowers greenish or yellowish; raceme simple, sparsely flowered; pedicels short, bracteate at base. They require a compost of light sandy loam and leaf mould; the roots must be kept dry during winter. Propagated by offsets, in spring.

D. Balfourii (Balfour's). *fl.* greenish-yellow, nearly 1in. long; racemes loosely ten to twelve-flowered, 6in. to 9in. long; scape green, terete, 2ft. to 3ft. long. September. *l.* three to four, ensiform, sub-erect, about 1ft. long and 1in. broad. *h.* 2ft. Socotra, 1880.

D. glaucum (grey-leaved). *fl.*, corolla of a greenish tawny colour, glaucous or clouded with a grey bloom or hoar on the outside, almost 1in. long, tubularly campanulate; segments oblong, obtuse; raceme long, spiked, many-flowered, irregularly and distantly scattered; scape upright, scarcely flexuose, 2ft. to 3ft. high; peduncles straight, two or three times longer than the flower. August. *l.* upright, lorately oblong, lanceolate, glaucous, like the rest of the plant, flat, convolute, and sheathing at their base. *h.* 2ft. to 3ft. Cape of Good Hope, 1814. SYN. *Uropetalon glaucum* (under which name it is figured in B. R. 156).

D. serotina (late-flowering). *fl.* brown-coloured; racemes many-flowered; scape bending; corolla cernuous, cylindric-campanulate, six-partite for more than three-fourths of the length; segments linear-oblong, equal; outer ones acute, patent; inner more obtuse, partly coherent. June. *l.* nearly the length of the scape, alternately linear, channelled. *h.* 9in. Spain. SYN. *Scilla serotina* (under which name it is figured in B. M. 859). There is a variety of this with pinkish flowers, *D. s. fulvum* (figured in B. M. 1185).

D. umbonatum (umbonate). This species is closely allied to *D. Welwitschii*, but differs from that by its smaller and differently-shaped bulb, larger bracts, more numerous and shorter flowers, and differently-shaped ovary. Cape of Good Hope, 1865. SYN. *Uropetalum umbonatum.* (Ref. B. 17.)

D. Welwitschii (Welwitsch's). *fl.* green throughout, at first cernuous, finally erecto-patent, the inner segments of the perianth connate at the edges, shortly patulous at the tips, the outer segments reaching down within ¼in. of the base, the outer third reflexed, the tip cylindrical; raceme secund, four to six-flowered, 3in. to 4in. long; scape 1ft. long, erect, slender, terete, glaucous-green, naked. *l.* linear, about two lines broad, equalling or slightly exceeding the scape, sheathing it at the base, flat upwards, recurved, fleshy in texture, minutely ribbed, glaucous-green, naked. *h.* 1ft. Angola, 1867. This species succeeds well if grown exposed to the light in a cool greenhouse. SYN. *Uropetalum Welwitschii.* (Ref. B. 16.)

DIPHACA. *See* **Ormocarpum.**

DIPHYLLEIA (from *dis*, double, and *phyllon*, a leaf; in allusion to each stem of the plant bearing only two alternate leaves). ORD. *Berberideæ.* A pretty hardy herbaceous perennial. It thrives best in peat borders and edges of beds of American plants, in moist spots. Propagated by divisions, in spring.

D. cymosa (cymose).* Umbrella Leaf. *fl.* white, disposed in large loose heads or cymes. Summer. Berries blue, roundish. *l.* two, alternate, large, kidney-shaped, usually profoundly lobed at the apex. *h.* 1ft. North America, 1812. (B. M. 1666.)

DIPHYSA (from *dis*, twice, and *physa*, a bladder; in reference to the legume, which is furnished with a large membranous bladder on each side). ORD. *Leguminosæ.* A genus containing four species of ornamental stove evergreen trees or shrubs, often glandular, all natives of Central America. The soil best adapted to them is one composed of sandy loam and fibry peat. Propagated by cuttings, made from young shoots, and placed in sand, in a mild bottom heat.

D. carthagenensis (Carthagenian). *fl.* yellow; peduncles axillary, two to three-flowered. *l.* impari-pinnate; leaflets five pairs. *h.* 6ft. to 10ft. Carthagena, 1827. A small unarmed tree.

DIPLACUS (from *dis*, two, and *plakos*, a placenta; placenta separated into two parts). ORD. *Scrophularineæ.* A genus of half-hardy evergreens, now referred to *Mimulus*, from which it differs in the plants being more woody at the base.

DIPLADENIA (from *diploos*, double, and *aden*, a gland; referring to the presence of two gland-like processes on the ovary). ORD. *Apocynaceæ.* Very ornamental stove evergreens. Flowers usually rose or purple, showy. Leaves opposite, entire. Among stove twiners, there are few more deserving of general cultivation than these, as the large flowers of some of the species and

Dipladenia—*continued.*

hybrids are unrivalled for brilliancy of colour, especially if the plants are allowed free root room, in a prepared border. They are also well adapted for exhibition purposes, in which case it will be necessary to cultivate in large pots, to admit of removal. When in flower, and well grown, Dipladenias, in either of these positions, must be classed amongst the most beautiful of stove plants.

Propagation is effected by cuttings of the young shoots that are produced when the plants commence new growth, in spring. These, or single eyes, should be inserted in a compost of equal parts sand and peat, covered with a bell glass, and placed in a brisk bottom heat. Roots will soon be emitted, and the young plants may then be transferred to separate pots, grown on, and shifted into larger sizes as required.

After-Cultivation. This will consist chiefly in supplying plenty of heat and moisture in the early part of the season, and in thoroughly ripening the main growths in autumn for the succeeding year. A suitable compost is fibry peat, broken up roughly for use, with sufficient silver sand added to insure the free passage of water. Drainage must also be efficient, as few flowering subjects show the effects of a waterlogged soil quicker than do these. Young plants should be grown on without stopping, and be supported by a stake until of sufficient size to be placed on a trellis. This is best made of small galvanised wire, and a conical or globular form is most suitable. If intended for planting out, to train on the roof of a stove—a position best suited for showing the flowers of Dipladenias—the trellis will be unnecessary, as the plants may be trained upright until established, and then placed out permanently. If a little bottom heat can be obtained, it will be of material assistance. The flowers are produced in profusion all the latter part of the summer, on the wood of the current year. Nearly all this should be removed when the flowering season is over, unless required for main shoots to cover the trellis. Dipladenias should be kept warm and in a moderately dry condition when at rest in winter, gradually introducing more moisture to start them in spring. Plenty of heat and frequent syringings, in early summer, will encourage the production of good flowering wood. The plants are subject to the same insect pests as many others grown in the high temperature of a stove. When insects are detected, sponging the leaves and stems will prevent their increase, and is the best method of destruction.

D. amabilis (lovely).* *fl.* rosy-crimson, borne in clusters, very large, 4in. to 5in. in diameter; petals very round and stiff. May to September. *l.* shortly stalked, oblong-acute. *h.* 10ft. A very fine hybrid between *D. crassinoda* and *D. splendens.* (F. M. 309.)

D. amœna (pleasing).* *fl.* pink, suffused with rose, somewhat resembling *D. splendens*, but much finer; petals round, stiff, and not reflexed. *l.* oblong-acuminate. Garden variety. This valuable plant flowers as freely as *D. amabilis*, and has better foliage than that plant.

D. boliviensis (Bolivian).* *fl.* white, about 2in. across, with a golden-yellow throat; racemes sub-terminal or axillary, three or four-flowered. *l.* oblong, acuminate. Stems slender. Bolivia, 1866. A very pretty small growing species. (B. M. 5783.)

D. Brearleyana (Brearley's).* *fl.* opening pink, and changing to the richest crimson, very large. *l.* opposite, oblong, acute, dark green. A garden hybrid, of great beauty, and of the most floriferous character.

D. carissima (choicest).* *fl.* of a soft delicate blush-pink, with an open throat, marked opposite the centre of the oblique limb-segments by radiating lines of bright rose, about 5in. in diameter. Garden variety. See Fig. 674, for which we are indebted to Mr. Wm. Bull. (F. & P. 1879, 502.)

D. crassinoda (thick-jointed). *fl.* rose-coloured, of a very lovely shade. *l.* oblong-lanceolate. *h.* 10ft. Rio Janeiro. An old and well-known stove plant, now superseded by more showy sorts. SYN. *D. Martiana.* (B. R. 30, 64.)

D. c. Houtteana (Houtte's). An improved variety of the preceding, with beautiful rose-coloured flowers, having an orange-coloured throat.

D. delecta (choice). *fl.* of a very pretty shade of rosy-pink, finely formed, and of good substance; mouth encircled with deep

(1885)

Dipladenia—*continued.*

rose and shaded with violet, and the light throat shaded with yellow. Garden variety.

D. diadema (diadem).* *fl.* of a soft pink colour, suffused with rose, the mouth encircled with deep rose, of large size and excellent form. Garden variety.

D. Harrisi (Harris's). A synonym of *Odontadenia speciosa.*

D. hybrida (hybrid).* *fl.* of a flaming crimson-red, freely produced. *l.* large, stout, bright green. A beautiful garden variety, but rarely seen.

D. insignis (remarkable).* *fl.* rosy-purple, bold. A stout-growing garden variety, with very strong foliage. See next page, Fig. 675, for which we are indebted to Messrs. Veitch and Sons.

Dipladenia—*continued.*

A species with broad foliage and stout shoots. SYN. *Echites splendens.* (F. d. S. 1, 30.)

D. s. profusa (profuse).* *fl.* rich carmine, 5in. in diameter, produced abundantly in bunches from the axils of the leaves, and lasting a long time in perfection. *l.* oblong, acuminate. Garden variety.

D. s. Williamsi (Williams's). *fl.* with a deep pink throat. Raised from *D. splendens*, on which it is a decided improvement, flowering more freely.

DIPLAZIUM. *See* **Asplenium.**

DIPLECTHRUM. A synonym of **Satyrium** (which *see*).

FIG. 674. FLOWERING BRANCH OF DIPLADENIA CARISSIMA (see page 480).

D. Martiana (Martius's). A synonym of *D. crassinoda.*

D. nobilis (noble).* *fl.* changing from rosy-purple to orange-red, large. A very handsome, free-growing, garden variety. (G. C. 1847, 748.)

D. ornata (adorned). *fl.* of a rich crimson colour, beautifully suffused with violet, large. Garden variety.

D. Regina (Queen).* *fl.* blush on first opening, and afterwards changing to a most delicate flesh-colour, the throat being suffused with rose. An early-flowering variety, of neat growth and remarkably free habit.

D. rosacea (rosy). *fl.* soft rosy-pink, suffused here and there, and also bordered, with a deeper and richer shade of the same colour; throat yellow, marked with a bright rose ring at the mouth. Garden variety.

D. splendens (splendid). *fl.* white, suffused with pink, borne on spikes that keep on extending for months. Organ Mountains.

DIPLOCHITA. Included under **Miconia** (which *see*).

DIPLOCOMA. *See* **Heterothecа.**

DIPLODIUM. A synonym of **Pterostylis.**

DIPLOGASTRA. A synonym of **Platylepis.**

DIPLOLÆNA (from *diploos*, double, and *chlaina*, a cloak; alluding to the double involucre). ORD. *Rutaceæ.* A genus of about four species of greenhouse evergreen Australian shrubs. Flower-heads terminal, shortly pedunculate or nearly sessile. Leaves alternate, petiolate, entire. Diplolænas thrive in a compost of peat and a little fibry loam. Propagated by cuttings of firm young shoots.

D. Dampieri (Dampier's). *l.* green and glabrous above. Otherwise closely resembling *D. grandiflora.* (B. M. 4059.)

(1885)

Diplolæna—*continued.*

D. grandiflora (large-flowered). *fl.-heads* shortly pedunculate, 1½in. in diameter; petals linear, ciliate, concealed within the head. April. *l.* ovate or broadly oblong, very obtuse, 1in. to 2in. long, hoary-tomentose, especially beneath. *h.* 4ft. to 5ft.

DIPLONEMA. *See* **Euclea.**

DIPLOPAPPUS. Most of the plants formerly placed here are now included under **Aster** (which *see*).

Diplothemium—*continued.*

and one of sand. Increased by seeds. These palms have been recommended for sub-tropical gardening, for which purpose, if well hardened off, they form excellent subjects.

D. caudescens (stemmed).* *l.* 2ft. to 6ft. in length, pinnate; pinnæ from 1½ft. to 2ft. in length, about 1in. broad, with a bifid point, somewhat clustered together; upper surface dark shining green, of a very beautiful silvery-whiteness beneath.

FIG. 675. FLOWERING BRANCH OF DIPLADENIA INSIGNIS (see page 481).

DIPLOSTEMONOUS. With twice as many stamens as petals or sepals.

DIPLOTHEMIUM (from *diploos*, double, and *thema*, a sheath). ORD. *Palmæ*. Very noble palms, either almost stemless, or developing a short ringed trunk. Flowers monœcious, rather large. Leaves pinnate, with linear segments, silvery-white underneath. They thrive in a compost of two parts rich loam, one of peat, *h.* 10ft. Brazil, 1847. Described as being one of the handsomest palms in cultivation. SYN. *Ceroxylon niveum.*

D. maritimum (sea). *l.* pinnate, with a more ovate outline than the foregoing; the pinnæ are also closer together, 10in. to 12in. in length, and about 1in. broad; deep green above, silvery-grey below. *h.* 10ft. Brazil, 1823.

The other two species are: *campestre* and *littorale.*

DIPSACEÆ. An order of biennial or perennial herbs, natives of nearly all temperate countries. Flowers

Dipsaceæ—*continued.*

in heads, surrounded by an involucre; calyx limb superior, cup-shaped, entire, lobed, or ciliate, membranous, sometimes surrounded by a separate involucel; corolla funnel-shaped or cylindric, often curved; lobes four or five, obtuse, imbricate in bud; stamens four, inserted on the corolla tube. Leaves opposite or rarely verticillate, exstipulate. There are five known genera, including *Cephalaria*, *Dipsacus*, and *Scabiosa*, and about 125 species.

DIPSACUS (the Greek name used by Dioscorides, from *dipsao*, to thirst; probably in consequence of the connate leaves holding water). Teazel. ORD. *Dipsaceæ*. Erect, pilose, or prickly, hardy biennial herbs. Flower-heads terminal, oblong-ovate or roundish. Leaves opposite, usually connate at the base, toothed or jagged. These singular plants are best suited for the wild garden, or rough parts of the flower border. They thrive in almost any ordinary garden soil, and may be easily raised from seed. There are about twelve species, the undermentioned being only those that are worth growing.

D. Fullonum (fuller's). Fuller's Teazel. *fl.-heads* whitish, with pale purple anthers; leaves of involucre spreading, shorter than the ovoid heads. July. *l.* connate at the base, oblong-lanceolate, serrated; upper ones entire. Stem prickly. *h.* 4ft. to 6ft. The specific name of the plant is derived from the fact that its heads are used by the fuller in dressing cloth. This is believed by some to be but a cultivated variety of *D. sylvestris*, differing only in the scales of the receptacle being hooked at the extremity.

D. laciniatus (cut-leaved). *fl.-heads*, corollas whitish; anthers reddish; leaves of involucre slightly erect, stiffish, usually shorter than the ovoid head. July. *l.* connate at the base, sinuately jagged, and the lobes sinuately toothed; downy beneath. Stem prickly. *h.* 3ft. to 5ft. Europe and Siberia, 1683.

D. sylvestris (wood). Common Teazel. *fl.-heads* pale lilac; leaves of involucre inflexed, weak, longer than the ovate-oblong heads of flowers. July. *l.* connate at the base, ovate-lanceolate, acuminated, toothed. Stem prickly. *h.* 6ft. Europe (Britain).

DIPTERACANTHUS. This genus is now referred to **Ruellia** (which *see*).

DIPTEROCARPEÆ. An order of resin-bearing trees, all the species of which are found in the tropics of the Old World. Flowers often sweet-scented, disposed in axillary panicles. Leaves alternate, involute; stipules convolute. There are a dozen genera, perhaps the best known being *Dipterocarpus* and *Dryobalanops*.

DIPTEROUS. Having two wing-like processes.

DIPTERYX (from *dis*, double, and *pteryx*, a wing; in reference to the two upper lobes of the calyx, which appear like two wings). Tonquin Bean. SYN. *Baryosma*. ORD. *Leguminosæ*. A genus of about eight species of stove evergreen trees. Flowers violet or rose, disposed in terminal panicles. Leaves opposite or alternate, abruptly pinnate. They thrive in rich, rough, loamy soil. Cuttings will strike if inserted in sand, and a hand glass placed over them, in a moist heat. None are of any importance, except from an economic standpoint; they are useless as garden plants.

D. odorata (sweet-scented). *fl.* purple, dashed with violet, disposed in racemose panicles. *l. alternate*; leaflets five or six, alternate; petioles margined. *h.* 60ft. Guiana, 1799. The seeds of this tree are the Tonga or Tonquin Beans, well known as giving a grateful scent to snuff.

DIRCA (from *dirke*, a fountain; referring to the plant growing in moist places). ORD. *Thymeleæ*. A genus of a couple of species of hardy, deciduous, branchy shrubs, with the habit of miniature trees. Both are natives of North America, and the one in cultivation thrives well in a moist peaty soil. Increased readily by imported seeds, or by layers.

D. palustris (marsh).* Leather-wood. *fl.* yellowish, terminal, preceding the leaves. March. *l.* lanceolate, oblong, alternate, pale green, villous beneath. *h.* 2ft. to 5ft. 1750. (B. R. 292.)

DISA (derivation unknown; probably a native name). ORD. *Orchideæ*. A genus of about fifty species of terrestrial orchids, natives of tropical and South Africa, and the Mascarene Islands. All are very pretty and

Disa—*continued.*

interesting, but the number worth cultivating is somewhat limited. Of these, the best is *D. grandiflora*, sometimes known as the Flower of the Gods. Its culture, though considered by many to be difficult, is comparatively easy, where proper means and site are employed. With regard to its native surroundings, it should be borne in mind that the streams, &c., upon or near the margins of which it grows, are water gorges during some portion of the winter months, and occasionally very dry in the summer. The plants should be kept quite cool in winter, but not allowed to become too dry at any time. By the end of February, more water should be given; and from April until the flower-spikes are formed, too great a quantity cannot well be applied. *D. grandiflora* is one of the most beautiful of cool orchids, succeeding in an admixture of peat and sphagnum. The plants should be somewhat elevated in potting. Careful ventilation, avoiding draughts, is essential.

With regard to the best method of raising *D. grandiflora* from seed, the Rev. F. Tymons, of Dublin, says: "The seed should be sown as soon as it is ripe; but if that does not happen till late in the autumn, it would be safer to postpone the sowing until the following September, or the last week of August. There are two methods of sowing the seed, each of which has its advocates. One of them consists in sowing on living sphagnum, in a pot or pan. The moss must always be kept moist, which may be effected by constant and gentle dewings, as the danger of regular watering, as ordinarily understood, is that the seed would be washed down too deeply. The other plan is to sow on a sod of turf . . . . or hard peat . . . . I mean the peat as prepared for fuel. Let it be well soaked in water, and the seed sown thickly on its upper surface. Cover all with a bell glass, and place it in a cool, damp, and shady place. The turf must never become dry, but the spraying of water must be of the gentlest description. A good plan for watering very fine seed is to dip a stiff-haired brush in water, and to draw the hand briskly against it, at such a distance as that only the finest dew reaches the seed. When the seedlings appear, they must have more air. As soon as they can be handled, they should be pricked off into small pans, or into pots, not less than 4in. in diameter. The compost for the seedlings, for the first two years, should be somewhat similar to that for mature plants, only that the peat should be considerably finer for an inch or two on the surface, and a much larger proportion of silver sand is necessary. The after-treatment, as regards ventilation, situation, and water, is similar to that for established plants." The same writer warns "persons whose stock is limited to a plant or two, not to be too anxious for seed. One pod on a healthy plant is quite sufficient, as seeding retards the autumn growth and recovery, after the labour of flowering."

D. cornuta (horned-flowered). *fl.* green, white, and purple, moderately large; spikes 4in. to 6in. long, many-flowered; sepals dissimilar; petals small, oblong, decurved and falcate, with a broad auricle at the base; lip small, spathulate, green, with a large black velvety spot. December. *l.* lanceolate, erect or erecto-patent, acuminate, the lower ones sheathing at the base, and there marked with red spots, the uppermost sessile. Stem green, spotted with red, leafy to the summit. Cape of Good Hope, 1843. (B. M. 4091.)

D. grandiflora (large-flowered).* *fl.* light rose, scarlet, and gold. June and July. *l.* stem-clasping, alternate, dark green, shining. Stems 2ft. to 3ft. high, four or five-flowered. Table Mountain, 1825. (B. M. 4073.)

D. g. Barrellii (Barrell's).* *fl.* orange-scarlet; lip a lighter shade of the same colour, with crimson veins. 1874. (Gn., Feb. 1882.)

D. g. superba (superb). *fl.* bright scarlet and crimson, veined with pink, over 4in. in diameter. June and July. Stems 1½ft. to 2ft. high, two to eight-flowered. A very handsome form. (Gn., Feb. 1882.)

D. macrantha (large-flowered). A garden synonym of *D. megaceras*.

D. megaceras (great-horned).* *fl.* white, blotched inside with pale

Disa—*continued.*

purple, large; upper sepal (hood) conical, with an oblique mouth, acute above, slightly curved, undulate; lateral sepals decurved, oblong-lanceolate, with a short recurved spur behind the tip; petals broadly obovate; lip narrowly tongue-shaped, with a revolute tip, glabrous, smooth. August. *l.* lanceolate, long-acuminate, concave. Stems 1ft. to 2ft. high, robust, leafy. *h.* 1ft. to 2ft. South Africa, 1880. SYN. *D. macrantha*, of gardens. (B. M. 6529.)

D. polygonoides (Polygonum-like). *fl.* orange-yellow, or light red or scarlet; spikes very many-flowered; dorsal sepal erect, oblong, sub-acute, very concave, cymbiform, spurred at the base behind; petals much smaller than the sepals, erect, and partially concealed by the upper sepal, linear-oblong, tip obtuse and incurved; lip strap-shaped, smooth, flat or convex, obtuse or sub-acute, slightly constricted above the base. September. *l.* linear-lanceolate, or almost strap-shaped, gradually narrowed to the acuminate point, nearly flat. Stem tall, stout. *h.* 1ft. to 2ft. Natal, 1879. (B. M. 6532.)

DISANDRA. A synonym of **Sibthorpia** (which *see*).

DISBUDDING. By this term is meant the removal of superfluous buds, flowers, or shoots, in the early stages of growth, from fruit or other trees, in order to divert the sap into those which are stronger, and required to remain either for the production of branches, flowers, or fruits of superior quality. It is of necessity very largely practised with fruit-trees, under glass, that have to be kept within a limited area, and where the crop of fruit and continued vigour of the trees are annually matters of very great importance. The branches of Figs, Peaches, and Vines, amongst many others, are each year so full of young shoots in spring, or at other seasons, when started into growth, that if all were allowed to remain, the result would be a dense thicket of useless branches. Disbudding should always be performed with judgment, and only by those who understand it, as irreparable damage may easily be caused by the uninitiated. The operation should be commenced as soon as the young buds or shoots are large enough to pinch out with the finger and thumb, and the process should be frequently repeated, rather than remove too much at a time. Many plants may, with advantage, be disbudded occasionally to thin the branches, for admitting more light and air, or for inducing a more compact habit. Disbudding of flowers, where crowded, if carefully performed when in an early stage, may also be recommended in some cases.

DISCARIA (from *diskos*, a disk; the disk being large and fleshy). SYN. *Tetrapasma*. ORD. *Rhamneæ*. An interesting genus of about thirteen species of spiny shrubs. One is a native of Australia, another of New Zealand; all the rest are extra-tropical South American. They are closely allied to **Colletia** (which *see* for culture).

D. australis (Southern). *fl.* yellow; racemes short, many-flowered, rising from beneath the spines. May. *l.* few, opposite, obovate, minute, quite entire, pubescent. Branches almost leafless, pubescent; branchlets simple, spiny. *h.* 2ft. Australia, 1824. A greenhouse evergreen. SYN. *Tetrapasma juncea*.

D. serratifolia (saw-leaved).* *fl.* greenish-white, in axillary tufts, very fragrant. June. *l.* opposite, shining, bright green. *h.* 6ft. to 10ft. Branches green, like those of a broom, spiny. A capital subject for pot culture, or as a plant for a conservatory wall. (G. C. n. s., vi. 324.) SYN. *Colletia serratifolia*.

D. Toumatou (Toumatou). Wild Irishman. *fl.* white, ⅛in. in diameter, apetalous; pedicels and calyx minutely downy; calyx tube short, obscure; lobes four or five, broadly ovate; disk broad, with a narrow upturned edge. June. *l.* small, fascicled, in the axils of the spines, absent in old plants, linear or obovate-oblong, obtuse or retuse, smooth or pubescent, quite entire or serrate. *h.* 15ft., in sub-alpine localities. New Zealand, 1875. Greenhouse.

DISCHIDIA (from *dischides*, twice-cleft; referring to the bifid segments of the corona). ORD. *Asclepiadeæ*. A genus of stove evergreen perennial trailers. There are about twenty-four species, natives of the East Indies, Malayan Archipelago, and tropical Australia. Flowers white or red, small, sub-umbellate. Leaves opposite, roundish, thick, fleshy. Stems rooting at the joints. For culture, *see* **Hoya**.

D. benghalensis (Bengalese). *fl.*, corollas small, urceolate; umbels few-flowered, from alternate axils, on short peduncles. September. *l.* oblong-lanceolate, two-edged, flat. India, 1818. (B. M. 2916.)

D. nummularia (Moneywort-leaved). *fl.* very small, in little sessile, axillary or interpetiolar clusters; calyx segments minute, corolla under one-and-a-half lines long; tube inflated; lobes narrow, longer than the tube; corona segments subulate. August. *l.* on very short petioles, nearly orbicular, thick, fleshy, not exceeding ½in. in diameter. *h.* 6in. Queensland. A succulent milky-juiced epiphyte, more or less mealy-white.

DISCOID. When, in *Compositæ*, the ray-florets are suppressed, the head of flowers is said to be Discoid.

DISCOLOR. Parts having one surface of one colour, and the other of another.

DISEASES. Many plants are subject to no Disease, although they may be particularly so to insect pests. Others, again, are susceptible to Disease at any stage of growth, and when it is often very difficult to know the cause from which the evil proceeds. Canker, Gumming, and Mildew are destructive Diseases to fruit-trees and plants. The cause of the first cannot be traced in many cases; while in others it may be discovered too late for applying a remedy, even if this were practicable. Gumming and Mildew are caused by Fungi. The progress of Disease in plants may often be stopped if measures are taken, when it is first detected, to find and, if possible, remove the cause. When once established, it is far more difficult to cure, or even check; fatal results being often the ultimate consequence. Diseases being caused by forces acting apparently under such opposite conditions in similar or different plants, it is impossible to give instructions for their prevention generally. A cold and undrained soil, or that which is excessively rich, sudden changes of temperature, improper pruning, draughts, or, on the other hand, a too close or moist atmosphere, with many other like conditions, tend to promote Disease, and should be always guarded against Diseases arising from the growth of a fungus on any parts of plants, are often greatly encouraged by a warm, moist atmosphere. Some of this description are amongst the most destructive, and, as a rule, it is very difficult or impossible to effect a cure, when they become established. The fungi which are more or less superficial in their growth—that is to say, live on the surface of the tissues—may be checked by dusting with sulphur, &c.; those, like the Potato Disease (*Peronospora*), for instance, which send their threads into the body of the host plant, cannot be destroyed by any such means.

DISEMMA. This genus is now merged into **Passiflora** (which *see*).

DISK. Any organ between the stamens and ovary, generally scaly or annular. The central tubular flowers of *Compositæ* are also called the Disk.

DISOCACTUS (from *dis*, two, *isos*, equal, and *Cactos*; in allusion to the number of the sepals and petals being constantly twice two). ORD. *Cacteæ*. This is now united with *Phyllocactus*, from the other members of which genus it only differs in its fewer sepals and petals.

DISPORUM (from *dis*, double, and *poros*, a pore; application not stated). Including *Prosartes*. ORD. *Liliaceæ*. A genus of about a dozen species of hardy perennial herbs, natives of North America and the mountains of tropical Asia. Flowers solitary or clustered, at the tips of the branches. Leaves alternate, sessile or shortly stalked, ovate or lanceolate. Stems creeping, spreading, or erect from an underground rhizome, sparingly branched, leafy. The species thrive in a moist peaty border, and prefer partial shade. Propagated by seeds, or by dividing the plants in spring, before active growth commences.

D. fulvum (tawny). A synonym of *D. pullum*.

D. Hookeri (Hooker's). *fl.* greenish, one to six; segments spreading above, ½in. long, narrowed at base; stamens nearly equalling, or a little exceeding, the perianth. *l.* ovate, mostly deeply cordate, rough on the margins and nerves beneath. *h.* 1ft. to 2ft. California.

Disporum—*continued.*

D. lanuginosum (woolly).* *fl.* yellow, green; peduncles dichotomous, two-flowered. May. *l.* ovate-lanceolate, far acuminate, three-ribbed, reticulately veined, downy on the under, naked on the upper, surface. Stem terminating in two or three divergent branches, from green becoming brown, adpressedly downy. *h.* 1ft. South Carolina, 1758. (B. M. 1490, under name of *Uvularia lanuginosa.*)

D. Menziesii (Menzies'). *fl.* greenish, one to five; segments nearly erect, ½in. to 1in. long; stamens a third shorter than the perianth. *l.* ovate to ovate-lanceolate, narrowly acuminate, rounded or slightly cordate at base, more or less woolly-pubescent. *h.* 1ft. to 3ft. California.

D. pullum (dusky).* *fl.*, corolla brown without, cernuous, longer than pedicels, cupped-campanulate; racemes one to four-flowered, axillary. September. *l.* ovate-lanceolate, acuminate, shortly petioled, nerved. Stem herbaceous, 1½ft. high, angular, sub-geniculately flexuose. China, 1801. A singular plant. SYN. *D. fulvum.* (B. M. 916, under name of *Uvularia chinensis.*)

D. p. parviflorum (small-flowered) only differs from the type in its smaller flowers.

DISSECTED. Cut into many deep lobes.

DISTEGANTHUS (from *distegos*, two stories, and *anthos*, a flower; referring to the disposition of the corolla above the receptacle). ORD. *Bromeliaceæ.* For culture, *see* **Bromelia.**

D. scarlatinus (scarlet) is described as being a magnificent stove perennial, with central leaves of a most intense vivid scarlet colour. Amazon, 1869. SYN. *Bromelia amazonica.*

DISTICHOUS. Producing flowers, leaves, or branches in two opposite rows.

DISTYLIUM (from *dis*, twice, and *stylos*, style; in allusion to the two styles). ORD. *Hamamelideæ.* A genus containing two or three species of greenhouse evergreen trees, natives of China, Japan, and Khasya. Flowers polygamous. Leaves alternate, persistent, thick, coriaceous, ovate, or oblong-lanceolate, entire; stipules lanceolate, caducous. The Japanese *D. racemosum*, and a variegated form, are the only ones in cultivation.

DITTANY. *See* **Cunila mariana** and **Dictamnus.**

DITTANY OF AMORGOS. *See* **Origanum Tournefortii.**

DITTANY OF CRETE. *See* **Origanum Dictamnus.**

DIURIS (from *dis*, double, and *oura*, a tail; in allusion to the two tail-like sepals). ORD. *Orchideæ.* This genus of terrestrial orchids, containing about fifteen species, all of them interesting, and some very beautiful, is almost unknown in our gardens, and the species as yet introduced are very rare. All are natives of Australia. For culture, *see* **Pterostylis.**

D. alba (white). *fl.* white, rose, green, brownish-purple. August. *h.* 1ft. New South Wales, 1875. (B. M. 6201.)

D. curvifolia (curved-leaved). A synonym of *D. maculata.*

D. elongata (elongated). A synonym of *D. punctata.*

D. lilacina (lilac). A synonym of *D. punctata.*

D. maculata (spotted). *fl.* yellow, on long pedicels, much spotted or blotched with brown or purple, and sometimes almost entirely dark-coloured except the yellow centre of the petals, under ½in. long; dorsal sepal erect, rigid, and embracing the column at the base, ovate-oblong, and very open at the top; lateral sepals at length recurved, narrow, rarely exceeding the petals; petals ovate, on a long rigid dark-coloured claw; lip shorter than the dorsal sepal, three-lobed from above the base, the lateral lobes large and usually as long, or nearly as long, as the broad middle lobe. March. *l.* narrow. Queensland, 1825. A rather small slender species, usually under 1ft. high. SYNS. *D. curvifolia* and *D. pardina.* (B. M. 3156.)

D. pardina (leopard-marked). A synonym of *D. maculata.*

D. punctata (dotted). *fl.* blue or purplish, often dotted; dorsal sepal in the typical form broadly ovate-oblong; lateral sepals deflexed, very narrow; petals broadly elliptical-oblong; lip about as long as the dorsal sepal, divided at the base into three lobes. *l.* usually two, linear, 3in. to 6in. long, with two empty sheathing bracts above them. Stems 1ft. to 2ft. high, or even more. SYNS. *D. elongata* and *D. lilacina.*

DIVARICATE. Growing in a straggling manner.

DIVERGENT. Spreading outwards from a common centre.

DIVI-DIVI. The reddish-brown, tough, curved pods of *Cæsalpinia coriaria*; they are largely imported into this country for dyeing and tanning purposes.

DOCK. *See* **Rumex.**

DOCKWEED, TROPICAL. *See* **Pistia Stratiotes.**

DODDER. *See* **Cuscuta.**

DODECATHEON (from *dodeka*, twelve, and *theos*, gods; of fanciful application). American Cowslip. SYN. *Meadia.* ORD. *Primulaceæ.* A genus containing two or three species of very ornamental hardy herbaceous perennials, with oblong-spathulate leaves and naked umbellate scapes of flowers. Petals long, narrow, reflexed. They succeed in a moist position, and in a compost of leaf mould and loam. All the species are admirably adapted for sheltered parts of the rock garden, or for borders. They are of easy propagation by division of the crowns, either in spring or autumn, the latter preferred. In addition to their value outside, they may be employed for the decoration of cool greenhouses. For this purpose, the plants may be taken up in November, placed in 6in. pots, and kept in a cold frame until early in March. After flowering, they should be plunged in a bed of coal ashes for the summer, under a north wall. Dodecatheons will not bear forcing; neither should they be in a position exposed to hot sunshine in summer.

D. integrifolium (entire-leaved).* *fl.* deep rosy-crimson, not so large as those of *D. Meadia*; umbels small, few-flowered; petals white at the base. Early summer. *l.* ovate, entire. *h.* 4in. to 6in. North America, 1829. (B. M. 3622.)

D. Jeffreyi (Jeffrey's). A garden synonym of *D. Meadia lancifolium.*

FIG. 676. DODECATHEON MEADIA.

D. Meadia (Meadia).* *fl.* rosy-purple, white, or lilac, with yellow anthers; scape twice the height of the leaves, crowned by an elegantly drooping umbel. April. *l.* in large tufts, nearly erect, oblong-ovate, unevenly toothed, from 3in. to 7in. long, and about 3in. across at the broadest part. *h.* 10in. to 16in. North America, 1744. In the Western States, called Shooting Star. See Fig. 676. (B. M. 12.) There are several very excellent forms of this species including the following:

D. M. elegans (elegant). *fl.* deeper in colour, shorter and broader in leaf, and roundly toothed; flower-stems shorter; umbels more numerous, than in the type.

D. M. frigidum (cold).* *fl.* deep reddish-purple, not drooping; scape never more than six-flowered, mostly fewer. *l.* ovate, irregularly notched along the margins, about 3in. long, and spreading. Western North America, 1869. A very pretty dwarf form, with several nursery synonyms. It is somewhat difficult to grow, and should have stones placed around its roots to preserve an equable temperature. (B. M. 5871.)

Dodecatheon—*continued.*

D. M. giganteum (gigantic). A larger form in all its parts than the normal type, with pale green leaves; it also comes into flower about ten days earlier than *D. Meadia.*

D. M. lancifolium (lance-leaved).* *fl.* pink or rose, yellow towards the base; sepals and petals four each; scapes 1½ft. to 2ft. in height, supporting large umbels. Late spring. *l.* large, 6in. to 10in. long, or more, narrowly-spathulate, tapering towards the base. *h.* 1½ft. to 2ft. Rocky Mountains, 1867. A very distinct plant, easily recognisable by its very large leaves. SYN. *D. Jeffreyi* (of gardens). (F. d. S. 1662.)

Other forms are: *albiflorum* (white-flowered) (L. B. C. 1489) and *lilacinum* (lilac-flowered).

DOG ROSE. *See* **Rosa canina.**

DOG'S BANE. *See* **Apocynum.**

DOG'S MERCURY. *See* **Mercurialis perennis.**

DOG'S-TOOTH VIOLET. *See* **Erythronium.**

DOGWOOD. *See* **Cornus.**

DOLABRIFORM. Hatchet-shaped.

DOLICHOS (from *dolichos*, long; in reference to the length of the twining stems, which in some species extend to the tops of the loftiest trees). ORD. *Leguminosæ.* A large genus of stove, greenhouse, or hardy herbs or sub-shrubs. Flowers solitary or clustered in the axils, or in stalked racemes. Leaves pinnately trifoliolate; leaflets stipellate; stipules acute. Stems usually twining. Very few species are grown in gardens. They are of easy culture. All are increased by seeds; or cuttings of the perennials root readily under glass, in sand.

D. bicontortus (twice-twisted). *fl.* white and purple, disposed on long peduncles. Summer. *l.* trifoliate, on long petioles. Japan, 1869. Half-hardy climber.

D. lignosus (woody).* *fl.* rose-coloured, with a purplish keel; umbellate. July. *l.*, leaflets ovate, acute, smooth, glaucous beneath. Stem woody; branches twining, rather villous. India, 1776. Greenhouse evergreen. (B. M. 380.)

DOLIOCARPUS (from *dolios*, deceitful, and *karpos*, a fruit; fruits, though beautiful, are poisonous). ORD. *Dilleniaceæ.* A genus of mostly climbing shrubs, from tropical America. There are about a score species, very few of which have been introduced to cultivation, or are worth growing. For culture, *see* **Delima.**

D. Calinea (Calinea). *fl.* white; peduncles lateral, many-flowered. April. *fr.* a small fleshy shining berry. *l.* oblong, acuminated, quite entire. Guiana, 1822. Stove climber. (A. G. 221.)

DOLLINERA. *See* **Desmodium.**

DOMBEYA (named in honour of Joseph Dombey, a French botanist of the eighteenth century; he travelled in Peru and Chili as the companion of Ruiz and Pavon). ORD. *Sterculiaceæ.* Ornamental stove evergreen trees or shrubs. Flowers axillary or terminal, in few or densely-flowered cymes. There are nearly thirty species, all natives of Africa or the Mascarene Islands. They thrive in a compost of sandy loam and turfy peat. Cuttings of nearly firm young shoots will root in sand, if placed under a glass, and in bottom heat, in April.

D. acutangula (acute-angled). *fl.* red, large, in dichotomous crowded corymbs. *l.* smooth, cordate, acuminate, with three to five incised shallow, broad, or deep narrow, palmate lobes. *h.* 10ft. Mauritius, 1820. A low tree or shrub. SYN. *D. angulata.* (B. M. 2905 represents a variety in which the leaves are not at all lobed.)

D. angulata (angled). A synonym of *D. acutangula.*

D. Burgessiæ (Mrs. Burgess's).* *fl.* large, with spreading white petals, marked at their bases with a pleasing bright rosy tint, which also extends up the veins into the centre; disposed in large corymbose clusters. August to December. *l.* bright green, pubescent, from 6in. to 9in. long. *h.* 10ft. South Africa, 1865. (B. M. 5487.)

D. ferruginea (rusty-leaved). *fl.* white. *h.* 15ft. Mauritius, 1815.

D. Mastersii (Masters's).* *fl.* white, fragrant; peduncles axillary, bearing simple or sub-compound corymbs. *l.* cordate-ovate, velvety. Tropical Africa, 1867. (B. M. 5639.)

D. viburnifiora (Guelder-rose-flowered). *fl.* white, about 1in. across, borne in terminal corymbose heads, 5in. in diameter February. *l.* large, cordate, three-lobed. *h.* 15ft. Comorin Islands, 1850. (B. M. 4968.)

DONDIA. A synonym of **Hacquetia** (which *see*).

DONDISIA. A synonym of **Plectronia** (which *see*).

DOODIA (named after Samuel Doody, a London apothecary and botanist). ORD. *Filices.* A small genus of greenhouse ferns. Fronds pinnate or pinnatifid. Involucres membranous, the same shape as the sorus. Sori oblong or slightly curved, superficial, placed in one or more rows, parallel with, and between, the midribs and margins of the pinnæ. For culture, *see* **Ferns.**

D. aspera (rough).* *sti.* 2in. to 4in. long, erect, asperous. *fronds* 6in. to 18in. long, 2in. to 4in. broad, oblong-lanceolate, with numerous spreading linear pinnæ on each side, which are 1in. to 2in. long, ¼in. broad; margin strongly serrated, base dilated. *sori* oblong, in one or two rows. Temperate Australia, 1808. *D. a. corymbifera* is a very pretty form, having the apex of the fronds densely crested.

D. blechnoides (Blechnum-like). *sti.* 3in. to 4in. long, erect. *fronds* 1¼ft. long, 6in. broad, oblong-lanceolate, with numerous spreading linear pinnæ on each side, which are about 3in. long and ¼in. broad, with sharply serrated margins and dilated bases. New South Wales, 1835. In the true type of this species, the upper pinnæ are connected, the lower ones shorter and free, not dwindling down to auricles, which, Mr. Baker notes, is the case with the plant grown under this name.

D. caudata (tailed). *sti.* 4in. to 6in. long, slender, smooth. *fronds* 6in. to 12in. long, 1½in. to 2in. broad, lanceolate, with numerous spreading linear pinnæ on each side, which are about 1in. long; frond often terminated by a long entire point. Australia, &c., 1820.

D. c. confluens (confluent). *fronds* long, narrow, linear, upper part undivided, sinuato-pinnatifid in the lower part, with short rounded lobes. New Caledonia. SYN. *D. linearis.*

D. dives (Dives). *sti.* 6in. to 12in. long, slender, erect, smooth, scaly towards the base, *sterile fronds* 1ft. long, 3in. to 5in. broad, oblong-lanceolate, with numerous spreading oblong-linear pinnæ on each side, which are 2in. to 3in. long, ½in. broad; margin undulated and serrated. *fertile fronds* longer, with narrow linear pinnæ. *sori* linear-oblong. Ceylon.

D. linearis (linear). A synonym of *D. caudata confluens.*

D. lunulata (crescent-shaped). A synonym of *D. media.*

D. media (middle).* *sti.* 4in. to 6in. long, erect, smooth. *fronds* 1ft. to 1½ft. long, 1½in. to 4in. broad, lanceolate, with numerous spreading linear pinnæ on each side, which are 1in. to 2in. long, and about ½in. broad; margin toothed, the upper ones dilated and connected at the base, those below the middle free and cordate, the lower ones gradually diminishing. *sori* short, oblong, distant. SYN. *D. lunulata.* There are several varieties, among which the following may be named:

D. m. duriuscula (rather hard). *fronds* firm, caudate; central pinnæ about ½in. long, oblong, obtuse. *sori* one-serial, six to ten jugate. New Caledonia.

D. m. Kunthiana (Kunth's). *fronds* moderately firm; central pinnæ close, bluntish, sharply toothed. *sori* one-serial. Sandwich Islands.

DOOM PALM. *See* **Hyphæne thebaica.**

DOREMA (from *dorema*, a gift; in reference to its production of gum-ammoniac). ORD. *Umbelliferæ.* A genus containing two species of hardy herbaceous perennials, natives of Persia and Beloochistan. They are of easy culture in ordinary garden soil. Increased readily by seeds.

D. Ammoniacum (Ammoniac). Gum Ammoniac. *fl.* white; umbels proliferous, racemose; peduncles terete, woolly. June. *l.* large, petiolate, somewhat bipinnate, 2ft. long; lower leaflets distinct; superior ones confluent, deeply pinnatifid. *h.* 7ft. Persia, 1831. (B. M. Pl. 130.)

DORONICUM (from *Doronigi*, the Arabic name). Leopard's Bane. Including *Aronicum.* ORD. *Compositæ.* A genus containing about a dozen species of mostly dwarf, early-flowering, hardy herbaceous perennials, natives of Europe and temperate Asia. Flower-heads yellow; involucral bracts in two or three series, nearly equal; disk-florets perfect, pappus hairs in many series; ray usually female only, destitute of pappus, or with from one to three hairs. Leaves alternate; radical ones petioled; cauline ones distant, often amplexicaul. They are of very easy culture in ordinary garden soil. Propagated by divisions.

D. altaicum (Altaic).* *fl.-heads* yellow. July. *l.* toothed, obovate, amplexicaul; radical ones obovate-spathulate, narrowed into the stalk. *h.* 1ft. Siberia, 1783.

D. austriacum (Austrian).* *fl.-heads* yellow, large; stems one to five-flowered. Spring. *l.* dentate; radical ones cordate, stalked; lower stem ones ovate-spathulate, abruptly narrowed at the base; upper ones lanceolate, cordate, amplexicaul. *h.* 1ft. to 1½ft. Europe, 1816. Plant somewhat hairy.

Doronicum—*continued.*

FIG. 677. FLOWERING BRANCHES OF DORONICUM CAUCASICUM.

D. caucasicum (Caucasian).* *fl.-heads* yellow, nearly 2in. across, solitary, terminal, axillary. Spring. *l.*, cauline ones ovate, pointed, with a broad clasping base, margins toothed; radical ones reniform, margins deeply toothed. *h.* 1ft. Europe, Asia. See Fig. 677. (B. M. 3143.)

D. Columnæ (Columna's). *fl.-heads* yellow, large. Spring. *l.* toothed, pubescent; radical ones stalked, almost kidney-shaped; lower cauline ones auricled; middle ones cordate-spathulate; upper ones ovate-lanceolate, amplexicaul. *h.* 1ft. to 1½ft. Europe, 1824.

D. Pardalianches.* Great Leopard's Bane. *fl.-heads* yellow, generally three to five on each stem. Spring. *l.* cordate, toothed; radical ones on long stalks, cordate; stem ones few, ovate; upper ones sessile, amplexicaul. *h.* 1½ft. to 3ft. Europe. This species is reputed to be poisonous. (Sy. En. B. 762.)

D. plantagineum (Plantain). *fl.-heads* yellow, usually solitary, and terminal. Spring. *l.* toothed; lower ones stalked, ovate, or slightly cordate; the rest sessile, except the lowest, which has a winged stalk, and half embraces the stem. *h.* 2ft. to 3ft. Western Europe (Britain). (Sy. En. B. 762.)

D. p. excelsum (tall).* *fl.-heads* yellow, as in the type, but larger, 3in. to 4in. in diameter; ray achenes glabrous, without pappus. March to October. *l.*, radical ones on long petioles, rather roughly hairy; stem ones amplexicaul, broadly cordate-ovate, acute, coarsely toothed. Stem stout, sparsely hispid, furrowed, simple, or with one or two branches. *h.* 5ft., or more. A very elegant plant, more robust than the type. (G. C. n. s., xx. 297.)

DORSAL. On the back; or growing on the back.

DORSTENIA (named after Theodore Dorsten, a German botanist, born 1492, died 1552). ORD. *Urticaceæ*. Very curious plants, of neat compact habit, and easily cultivated in a moderately damp stove. The flowers are on a flattened leaf-like receptacle, and are green and inconspicuous. Some of the species have elegantly cut leaves; whilst those of others are decorated with silver markings. Increased by divisions, made before active growth commences; or by seeds, sown on a hotbed, about March or April.

D. argentata (silvery).* *l.* elliptic, or oblong-lanceolate, 3in. to 5in. long, dark green at the margins, and having a broad silvery central band, which is irregularly extended towards the margin of the leaf. South Brazil, 1869. It is of erect habit, with a downy purplish stem. (B. M. 5795.)

D. Bowmanni (Bowmann's). *l.* lanceolate, 3in. to 5in. long, 1in. to 1½in. broad, acute, obscurely toothed, bright green and smooth above, variegated with a white border to the midrib and lower half of the principal veins. Receptacle round, irregularly lobed, purple beneath. Stems about 6in. high, leafy. Rio Janeiro, 1872. (Ref. B. 303.)

Dorstenia—*continued.*

D. maculata (spotted). *l.* deep green, blotched with white, subradical, springing from a creeping rhizome, long-stalked, cordate at the base, hastate; margin crenate-dentate; receptacle quadrate, green. Mexico, 1863. (I. H. 362.)

D. Mannii (Mann's).* *fl.*, receptacle on the stem at the scars of old leaves; peduncles orbicular, about 1in. in diameter, green, pubescent on the back, very convex; margin with ten to fifteen slender, stiff, unequal processes; peduncle ½in. long; surface of receptacle nearly smooth. November. *l.* rather membranous, elliptic or obovate, acute, narrowed at the small obtuse or subcordate base, dark green, pale beneath, obscurely sinuate-toothed, or quite entire, glabrous, but opaque on both sides. Stem 6in. to 10in. high, terete, rather flexuous, erect, somewhat swollen at the scars of the fallen leaves, densely tomentose. *h.* 1ft. West tropical Africa, 1863. A very singular plant. (B. M. 5908.)

D. tubicina (Peziza-flowered). *fl.* numerous; scapes about equal in length with the petioles, terminated by a Peziza, or wine-glass-shaped receptacle, whose margin is incurved and crenated with granulated scales; anthers purplish, two-lobed. August. *l.* slightly pubescent, cordate-oblong, denticulate at the margin, reticulato-venose, petiolated; petiole about as long as the leaf. Root large in proportion to the size of the plant, woody, sub-fusiform, descending, truncated or præmorse, powerfully aromatic. *h.* 3in. Trinidad, 1817. A very rare and curious plant. (B. M. 2804.)

DORYANTHES (from *dory*, a spear, and *anthos*, a flower; the flower-stem is from 12ft. to 20ft. high, like

FIG. 678. DORYANTHES EXCELSA.

Doryanthes—*continued.*

the handle of a spear, bearing flowers on the top). ORD. *Amaryllidaceæ*. A genus of extremely beautiful amaryllids, requiring greenhouse culture, similar to *Dasylirion*, *Fourcroya*, &c. They thrive best in a compost of loam and leaf soil, in equal parts. Propagated from suckers, which should be placed in small pots, and grown on, repotting into larger sizes as becomes necessary. A considerable size of plant has to be attained before flowers are produced.

D. excelsa (tall).* *fl.* very brilliant scarlet, each as large as the common white Lily, disposed in a globose head at the top of the bracteate stem, the base of which is surrounded by leaves. Summer. *l.* numerous, long, lanceolate. *h.* 8ft. to 16ft. New South Wales, 1800. See Fig. 678. (B. M. 1685.)

D. Palmeri (Palmer's).* *fl.* red, with the centre lighter, large, funnel-shaped; spike pyramidal, 1ft. to 1½ft. high, and 10in. to 12in. broad, many-flowered, clothed with leafy bracts. *l.* in a dense tuft, broad-lanceolate, each about 6ft. long by 6in. in breadth, gracefully arching. *h.* 8ft. to 16ft. Queensland, 1874. This is a very handsome species. (B. M. 6665.)

DORYCNIUM (the old Greek name of a species of *Convolvulus*, from *dory*, a spear). Including *Bonjeania*. ORD. *Leguminosæ*. A genus of about half-a-dozen species of elegant hardy herbs or sub-shrubs. Flowers capitate or sub-umbellate, usually numerous. Leaves trifoliate, with the stipules in the form of the leaflets. All are of the easiest culture in rather dry soil, and are readily increased by seeds.

D. herbaceum (herbaceous). *fl.* white; heads on long peduncles. July. *l.*, leaflets and stipules obovate, obtuse. Stem herbaceous, erect. *h.* 1½ft. South Europe, 1802.

D. hirsutum (hairy). *fl.* whitish, or pale red, large; heads many-flowered. July. *l.* sessile; leaflets ovate, lanceolate or obovate. Stem erect, suffruticose. *h.* 1ft. to 2ft. South Europe, 1683. Plant clothed with hoary tomentum. (B. M. 336, under name of *Lotus rectus*.)

D. latifolium (broad-leaved). *fl.* white; peduncles many flowered, bracteate towards the apex. June. *l.* sessile; leaflets and stipules obovate and mucronulate. Stem erect, sub-shrubby. *h.* 1ft. to 2ft. East Europe, 1818. Plant pilose.

D. rectum (upright). *fl.* rose-coloured, small; peduncles bractless, many-flowered. June. *l.* petiolate; leaflets obovate, mucronate. Stem erect, shrubby. *h.* 2ft. South Europe, 1640. Plant villous.

D. suffruticosum (sub-shrubby).* *fl.* white, with a reddish keel; heads of flowers on long peduncles. June. *l.*, leaflets and stipules oblong-lanceolate, acute. Stem shrubby. *h.* 2ft. to 3ft. South Europe, 1640. (S. F. G. 760, under name of *Lotus Dorycnium*.)

DORYOPTERIS. Included under *Pteris*.

DOSSINIA (named in honour of E. P. Dossin, a Belgian botanist). The only species in this genus is a small terrestrial orchid, nearly allied to *Anœctochilus*, but differing in the boat-shaped process of the column, as well as in the absence of a bearded fringe to the lower part of the lip.

D. marmorata (marbled)* is the correct name of the plant described in this work under the name of *Anœctochilus Lowii*. SYN. *Cheirostylis marmorata*. (F. d. S. 370.)

DOUBLE FLOWERS. Generally speaking, the epithet Double is applied to flowers of very varied structural conformation. The most common conditions rendering a flower Double, in the popular acceptation of the term, are substitutions of petals or petal-like bodies for stamens and pistils, one or both. Another very common mode of Doubling is brought about by a real or apparent augmentation in the number of petals, as by multiplication, fission, &c. Double Flowers are often of much more value, from a purely horticultural standpoint, than single ones. The protective floral organs—the calyx and corolla—frequently wither quickly after fertilisation has taken place, whilst in those flowers in which the organs of reproduction have been metamorphosed into petaloid bodies, they remain, as a rule, in full beauty a much longer time. The predisposing causes of Doubling seem very different in various plants. In some, it may be brought about by an excess of nutrition; in others, by a process akin to starvation. In some cases, as in the common *Kerria japonica*, for example, there is a natural

Double Flowers—*continued.*

tendency for the flowers to become Double under cultivation. Single-flowered plants have been imported which, in a few years, have altogether ceased to produce single flowers. For a very exhaustive account of the various kinds of Doubling, and their morphological significance, the reader is referred to one of the Ray Society's publications, "Vegetable Teratology," by Dr. M. T. Masters. The means adopted by some successful growers to obtain Double Stocks will be described under **Stocks.**

DOUBLY-SERRATED. Twice serrated.

DOUGLASIA (named in honour of D. Douglas, a very zealous botanist and collector in North-west America; he came to an untimely end in the Sandwich Islands). ORD. *Primulaceæ*. A genus of four species of little hardy evergreen plants, allied to *Androsace*. They form admirable subjects for alpine situations. A compost of peat and loam is the best soil for them. Propagated by seeds. In Europe, the genus is represented by *D. Vitaliana*, already mentioned in this work under its more generally accepted name, *Androsace Vitaliana*. The other three species belong to Arctic North America.

D. nivalis (snowy).* *fl.* pink, sub-umbellate, on long peduncles. April. *l.* linear, obtuse, sub-amplexicaul, closely hairy. Branches rigid, hoary, sub-verticillate. *h.* 3in. Rocky Mountains, 1827 (B. R. 1886.)

DOUM PALM. *See* **Hyphæne thebaica.**

DOVE FLOWER. *See* **Peristeria elata.**

DOWN. A term applied to soft, short hairs, like down.

DOWNINGIA (named in honour of A. J. Downing, a promoter of horticulture). SYN. *Clintonia*, under which generic name the two species below-mentioned are generally included, but erroneously so. ORD. *Campanulaceæ*. Very ornamental annuals. Flowers bilabiate. Leaves small, linear-lanceolate. They are used with great effect in summer flower-gardening, and but little care is necessary to insure success. Seeds should be sown in a spent hotbed, in March, thinned out, so as to give the plants room, and kept growing till May, when they may be transferred to the open border. *D. pulchella* is especially pretty for hanging baskets.

D. elegans (elegant).* *fl.* blue, having a large white streak on the base, solitary, axillary, sessile. Summer. *l.* sessile, ovate, three-veined. *h.* 6in. North-west America, 1827. (B. R. 1241.)

D. pulchella (fair).* *fl.* rich blue, with yellowish eyes; upper segments of corolla ovate, acute, divaricate; middle segment of lower lip longest. Summer. *l.* obtuse. *h.* 6in. California, &c., 1827. SYN. *Clintonia pulchella*. (B. R. 1909.)

DRABA (Greek name used by Dioscorides, from *drabe*, acrid; referring to the taste of the leaves). Whitlow Grass. Including *Petrocallis*. ORD. *Cruciferæ*. More than 150 species have been described; but it is probable that not more than half that number are really distinct. Perennial or annual branched herbs, which are sometimes tufted, sometimes elongated, smooth or pilose, or usually velvety from soft branched hairs. Flowers white or golden, rarely pink or purple; racemes terminal; pedicels filiform, bractless. Leaves linear, oblong or ovate, entire or toothed.

"Amongst the spring-flowering alpines," says Mr. Robinson, "the genus *Draba* must always take an important position. In addition to the brilliant golden colour of the flowers of one section of the genus, the plants are characterised by a dwarf compact habit, and by much neatness in the arrangement of the bristly ciliated hairs, which not unfrequently become bifurcate; thus the attractive appearance in the matter of colour is enhanced, on a closer inspection, by the beauty of form and detail. In another section, we find white to be the predominant colour; and though in many cases the flowers are small, still, in the mass, filling up a nook or crevice in a rockwork, and contrasted with the dark green leaves,

Draba—*continued.*

they become very effective. They should be placed in the sunniest aspect on a rockery; the more effectually the plants are matured by the autumn sun, the more freely will they return these favours by an abundant bloom in early spring."

The perennials may be propagated by dividing at the roots; the annuals or biennials by seeds, which should be sown in ordinary garden soil, in the open border, in spring. Many of the strictly annual species may be made biennial by sowing seeds too late to allow the plants to flower the first season. Perennials, except where otherwise stated.

D. aizoides (Aizoon-like).* *fl.* yellow; scapes naked, smooth; stamens about the length of the petals. March. *l.* lanceolate-linear, keeled, ciliated. *h.* 2in. to 3in. Europe (South Wales). (Sy. En. B. 138.)

D. Aizoon (Aizoon).* *fl.* bright yellow; scapes naked, villous. April. *l.* linear, acutish, keeled, stiff, ciliated. *h.* 3in. Mountains of Western Europe, 1819. SYN. *D. ciliaris.*

D. alpina (alpine).* *fl.* golden-yellow, a little smaller than those of *D. aizoides*; scapes naked, pubescent. April. *l.* lanceolate, flat, pilose, with branched hairs. *h.* 3in. Northern Europe, 1816.

D. aurea (golden). *fl.* yellow; petals obovate, blunt, clawed. May. *l.* oblong-linear, acute, entire, pubescent. Stem leafy, somewhat branched, velvety. *h.* 6in. Greenland, 1824. Biennial. (B. M. 2934.)

D. bruniifolia (Brunia-leaved). *fl.* yellow; petals twice the length of the calyx and stamens; scapes naked, pubescent. June. *l.* linear, somewhat keeled, ciliated, acute, loosely rosulate. *h.* 4in. Caucasus, 1825. Plant loosely tufted. (R. G. 780.)

D. ciliaris (hair-fringed). A synonym of *D. Aizoon.*

D. cinerea (grey). *fl.* white. Early spring. *l.* oblong-linear, entire; stem leaves five or six, entire, scattered. Stem leafy, somewhat pubescent. *h.* 3in. to 6in. Siberia, 1820. Biennial.

D. cuspidata (cuspidate). *fl.* yellow; scapes naked, villous. Spring. *l.* linear, acutish, keeled, ciliated. *h.* 3in. Tauria, 1821. Closely allied to *D. Aizoon.*

D. glacialis (icy).* *fl.* bright golden-yellow; scapes naked, covered with starry pubescence. May. *l.* linear-lanceolate, entire, hispid with stellate hairs. *h.* 2in. Siberia, 1826. Closely allied to *D. aizoides*, but differing from it in having a few-flowered stem, and pedicels which are shorter than the pod.

D. lapponica (Lapland). *fl.* white; scapes naked, very smooth. May. *l.* lanceolate, quite entire, rather pilose. *h.* 2in. or 3in. Alps of Lapland, 1824.

FIG. 679. DRABA MAWII.

D. Mawii (Maw's).* *fl.* white, ¾in. in diameter; sepals very concave, bristly at the back, green, tipped with red-brown; petals three times as large as the sepals, obovate-cuneate, retuse, spreading, quite white. Spring. *l.* linear-oblong, obtuse, shining; margin pectinate, with rigid incurved or spreading bristles; under surface with a prominent midrib. Spain, 1873. An excellent rock plant, forming low densely-tufted bright-green patches. See Fig. 679. (B. M. 6186.)

D. nivalis (snowy).* *fl.* white; scapes naked or one-leaved, smooth. April. *l.* oblong-linear, ciliated, and somewhat pilose. *h.* 1in. or 2in. Arctic Europe, 1820. Habit more compact than *D. lapponica.*

D. pyrenaica (Pyrenean). Rock Beauty. *fl.* at first white, afterwards changing to purple; scapes naked. May. *l.* cuneiform, palmate, three-lobed. *h.* 2in. to 5in. Mountains of South Europe. SYN. *Petrocallis pyrenaica.* (B. M. 713.)

Draba—*continued.*

D. Sauteri (Sauter's). *fl.* yellow; scapes smooth. Spring *l.* spathulate, stiff, ciliated. *h.* 4in. Switzerland.

D. tridentata (three-toothed). *fl.* yellow; scapes naked, smooth. August. *l.* obovate, narrowed at the base into the petiole, three-toothed at the apex, hairy. *h.* 3in. Caucasus, 1838.

D. violacea (violet).* *fl.* deep violet-purple. *l.* opposite, ovate, downy. Stem suffruticose, branched, diffuse. *h.* 6in. to 12in. Quito Andes, 1867.

DRACÆNA (from *drakaina*, a female dragon; the inspissated juice becomes a powder, like dragon's blood). SYN. *Pleomele.* ORD. *Liliaceæ.* A genus of about thirty-five species of ornamental stove foliage plants, which are widely dispersed over the tropics. Flowers generally fascicled in panicles, in a few species in dense sessile heads or oblong spikes. The differences between *Cordyline* and *Dracæna* (the two genera having been much confused in gardens) reside principally in the fruits, &c. The flowers of *Dracæna* are generally larger than those of *Cordyline*, and the cells of the ovary in the latter genus contain many ovules, whilst in *Dracæna* they generally contain but one.

Propagation. Dracænas, and the large group of plants grown as such, but which properly belong to the genus *Cordyline*, are easily and rapidly increased by cutting up the stems of old plants, in pieces 1in. or 2in. long, and placing them, at any season, in cocoa-nut fibre, or light soil, in the bottom heat of a propagating house. The tops of the plants will strike as cuttings, and the fleshy base of the stem may also be occasionally removed, and utilised for propagation. Young plants are soon obtained from the latter, and from almost every

FIG. 680. DRACÆNA CONCINNA.

Dracæna—*continued.*

eye of the firm wood that has been cut in pieces and inserted.

Cultivation. Although the class of plants under notice belong essentially to the stove, they will keep in good condition in a greenhouse in summer. Many are also well adapted for room or table decoration, particularly those with recurved narrow leaves. Useful sizes for such purposes may soon be obtained, if stove treatment, with plenty of light, be given. A compost of loam and lumpy peat, in equal proportions, with the addition of a little charcoal, will suit them admirably. Dracænas or Cordylines require but a moderate amount of pot room, in comparison to the size of plant that may be obtained. Pots 5in. or 6in. in diameter are large enough for useful decorative subjects 1ft. or 1½ft. high; and such plants may be potted on into proportionately larger sizes if required for exhibition or for large specimens. Plenty of heat and moisture are requisite when the plants are young, to encourage a vigorous, quick growth. It is not advisable, however, to syringe too much in winter, as the water, lodging in the axils of the leaves, is, at that season, liable to prove injurious. Exposure of the plants to plenty of light is requisite for obtaining the highest development of colour in their leaves. *See also* **Cordyline.**

Dracæna—*continued.*

D. arborea (tree-like). *fl.* greenish, ¾in. long. May. *l.* dense, sessile, lorate, 1½ft. to 3ft. long, 2in. to 3in. wide in middle. *h.* 40ft. Northern Guinea, 1800.

D. cernua (drooping). A synonym of *D. reflexa*.

D. concinna (neat).* *l.* narrow, of a sombre green, with purplish-red margins; the contracted stalk-like base is also green, with a slight purplish tinge. *h.* 6ft. Mauritius, 1870. A very useful neat-growing species, with a dwarf, compact habit. See Fig. 680. (R. G. 1864, 441.)

D. cylindrica (cylindrical). *fl.* white, small; spike cylindrical, sessile, terminating the stem. *l.* linear-lanceolate, or obovate-lanceolate, bright green, spreading. Stem erect, undivided. *h.* 5ft. West tropical Africa. (B. M. 5846.)

D. Draco (Dragon).* Dragon-tree. *fl.* greenish-white, very small, forming into a large panicle. *l.* lanceolate-linear, entire, glaucous, disposed in a crowded head. Stem arboreous, simple, or divided at the top, and, when old, becoming much branched, each branch being terminated by a head of leaves. *h.* 40ft. Canary Islands, 1640. This very fine species is much more graceful and elegant when in a young state than when it becomes old. It can be used very effectively in sub-tropical gardening, and may remain in the open from May to September, inclusive. There are few better ornaments for a conservatory than well-grown specimens of this plant. The famous Dragon-tree of Orotava measured 60ft. in height, and the stem was 15ft. in diameter. (B. M. 4571.)

D. elliptica (elliptic). *fl.* greenish-yellow, rarely solitary, mostly in pedicellate fascicles of threes. March. *l.* generally spreading, petiolate, coriaceo-membranaceous, elliptical-lanceolate, glossy, acute and mucronate, closely marked with parallel longitudinal lines or striæ, full green; petiole grooved, dilated, and amplexi-

FIG. 681. DRACÆNA GOLDIEANA.

Dracæna—*continued.*

caul at the base. Stem fruticose, 2ft. to 3ft. or more high, terete. *h.* 2½ft. India, Java, &c. SYN. *Sanseviera javanica.* There is a pretty variety, *maculata* (B. M. 4787), having its leaves spotted or blotched with yellow.

D. fragrans (fragrant). *fl.* very fragrant. April. *l.* lanceolate, lax. *h.* 6ft. Tropical Africa, 1768. (B. M. 1081.)

D. f. Lindeni (Linden's).* *l.* deep green, traversed their entire lengths by bands of creamy-white and various shades of yellow; elegantly recurved, lanceolate-acuminate. 1879. This plant forms a highly useful subject for decorative purposes. (I. H. xxvii. 384.)

D. Goldieana (Goldie's).* *fl.* in a dense globose sessile head, 2in. in diameter, surrounded on the outside by a few reduced leaves; perianth white, above 1in. long, with lanceolate spreading segments. *l.* cordate-ovate, acuminate, with a yellowish-green costa, marbled and irregularly banded with dark green and silvery-grey in alternate straight or furcate bands. West tropical Africa, 1872. A very magnificent ornamental foliage plant, of erect habit, and with closely-set, stalked, spreading leaves. See Fig. 681, for which we are indebted to Mr. Wm. Bull. (B. M. 6630.)

D. marginata (bordered). *l.* ensiform, densely rosulate, 1ft. to 1½ft. long by ¾in. broad, spreading, rigid, green, margined and veined with red. Trunk 4ft. to 5ft. high, 1in. thick, branched. Madagascar.

D. phrynioides (Phrynium-like).* *l.* broadly ovate, acuminate, coriaceous, 6in. to 8in. long, exclusive of the petiole; upper surface very dark green, profusely spotted with pale yellow; under surface paler. Fernando Po, 1863. A very pretty dwarf growing plant, requiring plenty of heat and moisture to cultivate it to perfection. (B. M. 5352.)

D. reflexa (reflexed). *fl.* greenish-yellow, nearly 1in. long, very numerous, disposed in a handsome branching raceme. *l.* oblanceolate. *h.* 12ft. to 15ft. Mauritius, 1819. SYN. *D. cernua.*

D. Saposchnikowi (Saposchnikow's). *fl.* whitish. Spring. *h.* 10ft. 1870. A tree-like species, of branching habit, and distinct character. Native country unknown. 1870. (R. G. 705.)

D. Smithii (Smith's). *fl.* in crowded fascicles in the axils of the panicle, and terminating short branchlets, sub-sessile; perianth pale yellow, ½in. long. Winter or early spring. *l.* 3ft. to 4ft. long, forming a spreading rosette on the crown of the stem, slightly recurved, not waved, narrowly ensiform, broadest beyond the middle, acuminate, bright green, striated; midrib indistinct above, very strong and prominent beneath. Stem slender, 15ft. high, hitherto quite unbranched, cylindric, almost smooth. Tropical Africa, 1850. This species is closely allied to *D. fragrans.* (B. M. 6169.)

D. surculosa maculata (spotted sucker).* *fl.* pale yellowish, small, disposed in a lax globose corymb. *l.* green, with yellow spots, lanceolate. Old Calabar, 1867. A pretty slender shrub. (B. M. 5662.)

D. umbraculifera (umbrella-bearing). *l.* 2ft. to 3ft. long, about 1in. wide, dark green, very closely set, horizontal, with the ends slightly recurved, giving it the appearance of a table top or umbrella. *h.* 10ft. Mauritius, 1778. A very peculiar and distinct species. (L. B. C. 289.)

Many other plants, usually known as Dracænas, will be found described under the genus **Cordyline.**

DRACOCEPHALUM (from *drakon*, a dragon, and *kephale*, a head; in reference to the ringent corollas). Dragon's Head. ORD. *Labiatæ.* A genus of about thirty species of perennial or annual herbs, natives of Europe and extra-tropical Asia. Whorls many-flowered, axillary or approximate into a terminal spike; bracts usually foliaceous; corolla generally large, with a very wide throat and a bilabiate limb. Leaves entire, dentate or palmatifid. Very showy border plants, when in flower. All are hardy, and delight in a cool situation. The perennial species are readily increased by divisions of the root, or by cuttings of the young shoots, in April or May; the annuals, by seeds, sown in the open, in April. Perennials, except where otherwise stated.

D. altaiense (Altaian).* *fl.* blue, nearly 2in. long; whorls disposed in oblong spikes, which are 2in. to 3in. long; floral leaves orbicular, pilose. July. *l.*, radical ones on long petioles, oblong, obtuse, crenated, cordate at the base; cauline ones shortly petiolate, ovate. Stems erect. *h.* 6in. to 9in. Siberia, 1759. See Fig. 682. SYN. *D. grandiflorum.* (R. G. 855.)

D. argunense (Argun). *fl.* blue, pubescent; whorls sub-spicate. July. *l.* linear-lanceolate, quite entire, glabrous, nearly sessile. Stems erect. *h.* 1ft. to 1½ft. Dahuria, 1822. (L. B. C. 797.)

D. austriacum (Austrian).* *fl.* blue, over 1½in. long; whorls somewhat interruptedly spicate, six to ten-flowered; floral leaves hispid. July. *l.* three to five-cleft; segments linear, with revolute edges. Stems erect, rather pilose. *h.* 1½ft. Europe, 1597.

D. canescens (hoary). A synonym of *Lallemantia canescens.*

Dracocephalum—*continued.*

D. grandiflorum (large-flowered). A synonym of *D. altaiense*

D. Moldavica (Moldavian). *fl.* blue or white, with a very wide throat; whorls distinct, disposed in long racemes; floral leaves narrower. July. *l.* petiolate, lanceolate, deeply crenated. Stem erect, branched. *h.* 1ft. to 1½ft. Eastern Siberia, 1596 Annual.

D. nutans (nodding). *fl.* blue; whorls distinct, many-flowered, disposed in long nutant racemes; floral leaves oblong-lanceolate. July. *l.* petiolate, ovate, crenated. Stems erect. *h.* 1ft. Eastern Russia, 1731. (B. R. 841.)

D. peregrinum (diffuse).* *fl.* blue; inflorescence about 1½ft. long; whorls distinct, few-flowered, secund; floral leaves quite entire. July. *l.* quite glabrous, on short petioles, lanceolate, mostly few-toothed. Branches ascending. Siberia, 1759. Plant decumbent. (B. M. 1084.)

D. Ruprechtii (Ruprecht's). *fl.* rosy-purple or lilac, about 1in. long, disposed in axillary clusters. *l.* ovate-lanceolate, variously incised and toothed. *h.* 1½ft. Turkestan, 1880. Of a very dwarf, neat habit. (R. G. 1018.)

FIG. 682. DRACOCEPHALUM ALTAIENSE, showing Habit and Single Flower.

D. Ruyschianum (Ruysch's). *fl.* purplish, 1in. long; whorls approximate, sub-spicate, generally six-flowered. June. *l.* linear-lanceolate, quite entire, 1in. to 1½in. long, nearly sessile, with revolute edges, having young ones in the axils. Stems erect, finely pubescent. *h.* 2ft. Europe, 1699.

D. R. japonicum (Japanese).* *fl.* white; central lobe of corolla with a blue border and white spots. *h.* 2ft. Japan, 1879. A very fine plant, and an improvement on the typical species.

D. speciosum (showy).* *fl.* pinkish-blue; lip with darker spots; whorls two to four, dense, sub-secund. June. *l.*, radical ones on long petioles, broadly heart-shaped; cauline ones few, shortly petiolate; all wrinkled and green on both surfaces, and pubescent beneath. *h.* 1½ft. Himalaya, 1877. (B. M. 6281.)

DRACONTIUM (Greek name applied by Hippocrates to another plant, a diminutive of *drakon*, a dragon; in reference to its spots and streaks being like those on serpents). Dragon. ORD. *Aroideæ* (*Araceæ*). Stove plants, more remarkable than beautiful or ornamental. Flowers fœtid, hermaphrodite, in a sessile spadix with a hooded spathe. Leaves stalked, pedate. Rhizome thick, fleshy. There are six species, all natives of tropical America. For cultivation, *see* **Amorphophallus.**

D. albostipes (white-stalked). *l.* solitary, tripartite; divisions winged, and bearing irregularly dichotomous leaflets of a bright green colour; stalk or petiole tall, stout, scabrous at the base, tapering upwards, of a greyish-white, with distinct blotches of a darkish brown running round them in irregular bands. *h.* 3ft. Antioquia, 1877.

D. annulatum (ringed). *l.* of a bright green, tripartite, each division laterally branched on one side; petiole stoutish, erect, dull umber-brown, mottled in irregular rings with pale brown and whitish-brown markings. *h.* 3ft. Antioquia, 1877.

D. asperum (rough).* *fl.*, spathe purplish-brown, erect, boat-shaped; spadix erect, cylindrical, about 2in. long. *l.* pedately divided into three (or five) main subdivisions, usually solitary, but sometimes two, spreading horizontally, 3ft. to 4ft. across; ultimate segments oblong-lanceolate, acuminate, entire; petiole 5ft. to 6ft. high, as thick as a man's thumb at the base gradually

Dracontium—*continued.*

tapering upwards, with wavy bands or blotches of a purplish colour, mottled with white. 1869. SYNS. *D. elatum* (G. C. 1870, 344) and *Amorphophallus nivosus*. (Ref. B. 282.)

D. Carderi (Carder's).* *l.* tripartite; divisions often twice dichotomous, with oblong segments and an irregularly-winged rachis; petiole tall, erect, slightly asperous near the base, of a dull flesh-colour, and freely banded with irregular blotchy rings of an umber-brown hue, the flesh-colour predominating. *h.* 3ft. Antioquia, 1877. (B. M. 6523.)

D. elatum (tall). A synonym of *D. asperum*.

D. gigas (giant). *fl.*, spathe bluish-brown outside, brownish-red within, about 2ft. long, supported on a scape 3ft. long. *l.* solitary, broad, trichotomously divided, supra-decompound, nearly 4ft. long; ultimate divisions confluently pinnatifid; petiole yellow, beautifully barred and striped with purple. *h.* 10ft. Nicaragua, 1869. SYN. *Godwinia gigas*. (B. M. 6048.)

D. polyphyllum (many-leaved). *fl.*, inflorescence appearing after the entire decay of the foliage; spathe upon first opening emitting an abominable fetor. The plant figured in B. R. 700 flowered in December. *l.* supra-decompound, pedate. *h.* 2ft. India, 1759. A very singular species. (B. R. 700.)

DRACOPHYLLUM (from *drakon*, a dragon, and *phyllon*, a leaf; in reference to the leaves resembling those of *Dracæna Draco*). Including *Sphenotoma*. ORD. *Epacrideæ*. A genus of about twenty-five species of greenhouse shrubs or small trees, of which eleven are from New Zealand, five from New Caledonia, and the rest from extra-tropical Australia. Spikes or racemes terminal, simple, or compound. Leaves imbricate, cucullate at the base, and half-sheathing. For culture, *see* **Andersonia.**

D. capitatum (round-headed).* *fl.* pure white, in terminal heads, very delicate; bracts two, at the base of the calyx; corolla salver-shaped; limb of five spreading, very obtuse segments; mouth contracted. Summer. *l.* ensiform-lanceolate, pungent, dark green, tipped with red and somewhat spreading on the stem; paler-coloured, smaller, and close-pressed upon the branches. *h.* 1ft. to 1½ft. West Australia. A very pretty plant. (B. M. 3624.)

D. gracile (slender).* *fl.* snow-white, collected in terminal, ovate, compact heads, sweet-scented, especially in the evening; calyx two-bracted, sessile, green, five-leaved; corolla saucer-shaped; limb five-cleft; peduncles clothed with closely-adpressed, erect, sheathing leaves or bracts. June. *l.* lanceolate, recurved, sheathing the stem at their base, mucronulate and sub-pungent, collected at the extremities of the sterile branches into green globular heads. Branches straggling. West Australia, 1826. A handsome, but low, straggling shrub. (B. M. 2678.)

D. secundum (side-flowering). *fl.* white; corolla tubularly funnel-shaped. April. *h.* 1ft. to 2ft. New South Wales, 1823. (B. M. 3264.)

DRACOPIS. This genus is now included under **Rudbeckia** (which *see*).

DRACUNCULUS (diminutive of *draco*, from *drakon*, a dragon; the petioles, &c., being marked like the skin of a snake). ORD. *Aroideæ* (*Araceæ*). A genus of two or three species, nearly allied to *Arum*, from which it principally differs in the upper portion of the spathe being flat and not convolute. Leaves pedately divided. Stems spotted. Rhizomes tuberous. The species most commonly met with in gardens is *D. vulgaris* (often called Dragon), already described in this work as **Arum Dracunculus** (which *see*). The other two, which are much less frequently seen, are *D. canariensis* and *D. cretious*.

DRAGON. *See* **Dracontium** and **Dracunculus.**

DRAGON'S BLOOD. The Dragon's Blood of commerce is a resin used in medicine as a colouring agent, and in plasters and tooth-powders. It is furnished by *Calamus Draco*, and is imported into this country from Eastern Sumatra, Southern Borneo, &c. The resin covers the scales of the fruit with a thin coat, and is obtained by shaking the fruits or beating them in a sack, then melting in the sun or in boiling water, and afterwards moulding into lumps, balls, or sticks. The name Dragon's Blood is also given to resins yielded by *Dracæna Draco* in the Canary Islands, by *Dracæna cinnabarina* in Socotra, and also by *Pterocarpus Draco*.

DRAGON'S HEAD. *See* **Dracocephalum.**

DRAGON-TREE. *See* **Dracæna Draco.**

DRAINING. Efficient Drainage is one of the most important points in connection with the cultivation of garden crops. No plant will succeed in an undrained soil, which soon becomes sour and water-logged, either in a pot or elsewhere. Placing crocks or other porous material in pots, in such a manner as to allow of the free passage of superfluous water from the plants, for a considerable time, if necessary, cannot be too carefully practised. In Draining the whole or any part of a garden, a few important conditions will have to be considered. First, it should be known whether there is an accumulation of land water near enough the surface to cause injury, or if it is the surface water only that will need to be conducted away. This will depend a great deal on the tenacity of the soil. Land, somewhat light on the surface, with a gravelly sub-soil, will generally be sufficiently porous underneath to allow all such water to pass away naturally without Drains, excepting those required for the walks. Heavy soils, with a sub-soil of clay, require an efficient system of Drainage to render them fit for the cultivation of fruit-trees or any garden crops. Water collecting underneath the surface is the greatest evil. If this be removed, the surface water will naturally follow, and must, of necessity, be succeeded each time by fresh air. A main Drain, large enough to receive and conduct the water from all the branches along its course, should be first inserted. A means of outlet lower than any part of the land to be Drained, is necessary, and the main should proceed in a tolerably straight line from the highest point to this, with an equal gradient throughout. The branches may be arranged at right angles, at distances of 15ft. to 20ft. apart, according to the quantity of water that accumulates, or the nature of the soil. Pipes 3in., or even 2in., in diameter, will generally be large enough; their position should be fixed beforehand, and sockets inserted in the main for their reception. Tools specially employed for Draining are the best, being made long and narrow, to admit of digging trenches deep without being wide. A main Drain-pipe, 6in. in diameter, will conduct away a large quantity of water, and this, with its outlet, should be sufficiently deep to allow a fall for all the branches connected. The requisite depth for Drains varies with different soils, 3ft. to 4ft. from the surface being that generally adopted. Glazed and common pipes are both largely used. The former are the most expensive, but are very strong, and best suited for mains. These should be fitted together closely, and, if laid near trees, the joints cemented, to prevent roots from entering and eventually choking them. Draining, to be effective in its results, must be systematically carried out, and each pipe inserted firmly in its proper position. A covering of stones, broken bricks, or similar material, placed over them before filling in the soil, will greatly assist the percolation of water. Some persons prefer laying the main and branches at the same time, thus finishing all as they proceed. This is immaterial, if all the levels have been previously properly obtained. It is, however, safest to insert the main Drain first, as a failure in its action will cause the whole to be useless. In either case, the work should be commenced at the highest point from the outlet, afterwards proceeding with a regular fall towards it. An ordinary spirit level, fixed in a long straight-edge, will indicate at once the fall in that distance, supposing the Drain is not too deep to admit of the bubble being seen. Where the ground is nearly flat, the spirit level is frequently used on each pipe; and, on the other hand, where the incline is certain, the fall may be easily seen by the eye.

DRAKÆA (named in honour of Miss Drake, botanical artist for the "Botanical Register"). ORD. *Orchideæ*. A genus comprising three species of extremely curious Australian greenhouse terrestrial orchids. *D. elastica* bears a solitary flower, resembling an insect suspended in the air, and moving with every breeze; the stalk sup-

Drakæa—*continued.*

porting same is slender, and about 1½ft. long. *D. ciliata* and *D. irritabilis* have several flowers on a stem. They thrive in a compost of peat, loam, and rough sand. Propagated by divisions.

DRAWING, or DRAWN. A term applied to plants whose growth has been unnaturally hastened by overcrowding, or being placed too far from the glass. Soft-wooded plants, or young shoots, often become Drawn in consequence of insufficient air and light, or an excess of heat and moisture. Such a condition is always to be avoided, as solidity of growth is impossible, and weakness in the plant follows as a matter of course.

DREPANOCARPUS (from *drepanon*, a sickle, and *karpos*, a fruit; in reference to the form of the pods, which are falcate). Sickle-pod. ORD. *Leguminosæ*. A genus comprising eight species of ornamental stove evergreen shrubs, all of which are natives of tropical America, and one of West tropical Africa also. They thrive best in a peat and loam compost. Cuttings of nearly ripe shoots, intact, root in sand, if placed under a glass, in bottom heat.

D. lunatus (half-moon-podded). *fl.* white; panicles terminal, ferruginous. *l.* impari-pinnate, with usually from five to nine nearly opposite oval-oblong leaflets; spines stipular, hooked. *h.* 6ft. to 10ft. Tropical America and Western Africa, 1792.

DRESSING. A term applied both to the renovation by digging, and the incorporation of manure for enriching, the ground. Top-dressing is the operation of spreading manure, &c., over the surface, whilst the plant or crop is in a growing condition.

DRILLING. A term applied to the plan of sowing small seeds in the open ground, in drills or shallow trenches usually made with a hoe. The ground should first be raked rather fine, and a line laid the required distance, and strained tight. The workman must then walk on the ground and make a trench next the line with the end of the hoe-blade. The depth may be regulated according to the size of the seed or the sorts. This method, for economy in seed sowing, is much superior to any other; for not only can the quantity at command be distributed more evenly, and the necessity of severely thinning the young plants thereby obviated, but weeding can be performed with every facility. Drills should be parallel to each other, and uniform in depth and distance apart.

DRIMIA (from *drimys*, acrid; the juice of the roots is so acrid as to cause inflammation when applied to the skin). SYNS. *Idothea* and *Idothearia*. ORD. *Liliaceæ*. A genus of greenhouse bulbous plants. They require a mixture of sandy loam and leaf mould, or peat soil, and, when not in a growing state, water should be almost entirely withheld. There are over a dozen species, all natives of tropical and Southern Africa; the few in cultivation are rarely met with, except in botanic gardens. None of them can fairly be called showy plants.

DRIMIOPSIS (from *Drimia*, and *opsis*, resemblance). ORD. *Liliaceæ*. A genus of about half-a-dozen species of little-known greenhouse bulbous plants, not unlike *Drimia*, and requiring similar treatment. The flowers are usually greenish-white. The following species are most worthy of cultivation:

D. Kirkii (Dr. Kirk's).* *fl.*, perianth white, ¼in. long; segments oblong, obtuse, slightly cucullate at the tip; raceme 3in. to 4in. long, the upper flowers crowded; those of the lower half looser, many of the uppermost abortive; scape terete, 1ft. or more long. July. *l.* contemporary with the flowers, lanceolate, 1ft. long, acute, narrowed to the base, pale green on the upper surface, with large irregular blotches of dark green, still paler beneath. Bulb globose, 1½in. in diameter, with thin whitish truncate tunics. *h.* 9in. Zanzibar, 1871. A very curious plant. (B. M. 6276.)

D. maculata (spotted). *fl.* twelve to twenty, a few of the lowest often lax and abortive; perianth at first milk-white, but changing to greenish-white as it matures; scape terete, 8in. to 12in. long. *l.* cordate-ovate, fleshy-herbaceous, acute, the upper surface bright green, blotched with deeper green. Bulb globose, the upper half

Drimiopsis—*continued.*

emergent and squamose. *h.* 9in. to 1ft. Cape Colony, 1851. An ornamental and interesting plant, flowering freely when grown in a warm and airy greenhouse, and kept near the light. (Ref. B. iii. 191.)

DRIMYS (from *drimys*, acrid, or *drimytes*, sharpness; referring to the taste of bark). SYN. *Wintera*. ORD. *Magnoliaceæ*. A genus of five species, one of which is South American, two Australasian, and one each from New Zealand and Borneo. Fine evergreen half-hardy trees, with aromatic bark, and axillary and terminal flowers. *D. Winteri* is the species most frequently seen in cultivation. It grows very freely, but requires a little management in the training, and the long branches will need cutting back. It has been found to succeed out of doors when planted in sandy loam against a wall, if the winters are not severe. Propagated by cuttings, made of half-ripened shoots, inserted under a glass, in a cold frame.

D. aromatica (aromatic). *fl.* white, pink, dicecious; sepals three, very concave; petals six, in two rings, or occasionally eight. April. *fr.* globose, sub-didymous. *l.* oblong, gradually tapering at base along the petiole, light green, distinctly marked with transparent dots, veinless on the under side. *h.* 9ft. to 12ft. Tasmania, 1843. Every part of the plant is highly aromatic and pungent to the taste. The fruit is occasionally used as pepper. (B. R. 1845, 43, under name of *Tasmannia aromatica*.)

D. Winteri (Winter's).* *fl.* milk-white, 1in. or more across, with a Jasmine-like perfume; petals eight to twelve; peduncles almost simple, aggregate, divided into elongated pedicels. *l.* oblong, obtuse; under surface glaucous. *h.* 25ft. South America, 1827. SYN. *Wintera aromatica*. (B. M. 4800.)

DRIMYSPERMUM. A synonym of **Phaleria.**

DROPWORT. *See* **Spiræa Filipendula.**

DROSERA (from *droseros*, dewy; the plants appear as if covered with dew, in consequence of being beset with glandular hairs). Sundew. ORD. *Droseraceæ*. A genus of about a hundred species of annual or perennial glandular (very rarely glabrous) herbs, sometimes bulbous. They are small-growing, but very beautiful, plants, of insectivorous notoriety. Some of the species, too, are climbers. Droseras are scattered over most parts of the world, and usually prefer marshy places. Some, however—several Australian kinds especially—grow in the driest ground, where their bulbous roots remain dormant for the greater part of the year, reviving with the first rains. Flowers in scorpioid revolute cymes, rarely solitary. Leaves ornamented with reddish irritable glandular hairs, discharging from their apices a drop of viscid acrid fluid. They are of easy culture, and the majority of those in cultivation thrive well in a compost of living sphagnum and a little peat. Plenty of drainage is essential, and the pots in which they are grown should be stood in a pan of water. Thorough exposure to the light is also important. Propagated by seeds, which should be sown so soon after gathering as possible. *D. binata*, which is, of the exotic species, mostly grown, was formerly increased by the tedious method of sub-divisions of the crowns. It is now found, however, that roots taken from strong plants, and cut into pieces of ½in. or 1in. in length, will serve the purpose admirably. These are laid on the surface of shallow earthenware pans, in sandy peat soil, and covered about ¼in. deep with the same material. They are then placed under a bell glass, and transferred to a damp, warm propagating house. In the course of a fortnight, swellings begin to appear on the surface of the detached roots, which increase in length till they reach the top of the soil. This generally takes place about five weeks after being put in. When about 2in. or so in height, they are separated, and put into small pots, in similar soil to that into which the roots were originally placed, with the addition of some chopped sphagnum. If carefully attended to, they soon make excellent plants. All the species (even the British ones, which, as a matter of course, are perfectly hardy) do well treated as greenhouse plants.

Drosera—*continued.*

FIG. 683. FLOWERS AND LEAF OF DROSERA FILIFORMIS.

D. binata (twin-leaved).* *fl.* pure white, large; raceme dichotomous. June to September. *l.* all radical, on long footstalks, deeply parted with two linear lobes. *h.* 6in. Australia, 1823. Plant stemless. SYN. *D. dichotoma* (of gardens). (B. M. 3082.) Perennial.

D. capensis (Cape). *fl.* purple; scape rather ascending, somewhat hairy, longer than the leaves. June, July. *l.* sub-radical, oblong-linear, obtuse, tapering at the base; footstalks glabrous, shorter than the limbs of the leaves. *h.* 6in. Cape of Good Hope, 1875. Perennial. (B. M. 6583.)

FIG. 684. DROSERA ROTUNDIFOLIA.

Drosera—*continued.*

D. dichotoma (dichotomous). A synonym of *D. binata.*

D. filiformis (thread-formed).* *fl.* purple, large; scapes erect, hardly equal in length to the leaves. June to August. *l.* filiform, very long, from a bulb-like base or corm; footstalks woolly at the base, much shorter than the leaves. *h.* 1ft. North America, 1811. See Fig. 683. (B. M. 3540.) Perennial.

D. lunata (crescent-leaved). *fl.* yellow; racemes lateral, few-flowered; sepals ovate, acute, beset with glandular hairs on the margins. July and August. *l.*, radical ones roundish-reniform; cauline ones scattered, stalked, moon-shaped, peltate. Stem erect, glabrous. *h.* 6in. Nepaul. A very beautiful annual plant, rarely seen in cultivation.

D. pauciflora (few-flowered). *fl.* white; scapes beset with glandular hairs, one or two-flowered. July, August. *l.* ovate-oblong, tapering at the base. *h.* 3in. Cape of Good Hope, 1821. Perennial.

D. peltata (peltate).* *fl.* pink, racemose. *l.* spaced along an elongated stem, forming minute flattened cups with the footstalks attached, not to one margin, but to the bottom; the inner surface and the edges of the cups are studded with tentacles. *h.* 1ft. Australia. Annual. (G. C. n. s., xix. 436.) There are two varieties of this species: *foliosa*, with white flowers; and *gracile*, with pink.

D. rotundifolia (round-leaved).* *fl.* white; scapes erect, four or five times higher than the leaves. July, August. *l.* orbicular; footstalks hairy, longer than the limb. The whole disk of the leaf, but especially its margin, is beset with red inflexed hairs. *h.* 4in. Northern hemisphere (Britain). Annual. See Fig. 684. Other native species are: *anglica* and *intermedia.*

D. spathulata (spathulate-leaved).* *fl.* purple, almost sessile, disposed in short racemes; scape glandular at the top, as well as the calyces. July. *l.* oblong-spathulate, tapering somewhat into the footstalk. *h.* 3in. Australia, 1861. Perennial. (G. C. n. s., xvi. 852.)

D. Whittakeri (Whittaker's). *fl.* white. Australia, 1862. A very rare species, much resembling *D. spathulata* in habit, but more erect. It is a deciduous form, and requires a long rest. Before starting into new growth, it must be taken out of the old soil and repotted. Perennial.

DROSERACEÆ. An order containing six genera and upwards of a hundred species, closely allied to *Saxifrageæ.* Perennial and annual glandular herbs, rarely shrubby below. Sepals four to eight, persistent; petals four to eight; stamens four to twenty. Leaves variable, radical and rosulate, or cauline and alternate, circinate in bud, stipulate. Most of the species are found inhabiting marshy places. Illustrative genera are: *Dionæa, Drosera,* and *Drosophyllum.*

DROSOPHYLLUM (from *drosos*, dew, and *phyllon*, a leaf; in allusion to the leaves being beset with stipitate glands, appearing like dew). ORD. *Droseraceæ.* A remarkable and very pretty sub-shrubby greenhouse plant, thriving in a light sandy loam. Propagated by seed. It should he kept somewhat dry, and no shading will be needed.

D. lusitanicum (Portuguese).* *fl.* yellow, large, disposed in a corymb at the top of a leafy stem, which attains 1ft. in height. Summer. *l.* elongate, linear, attenuated, circinate and revolute in vernation. Stem thick, woody, 2in. to 3in. high, at the top of which are the leaves. Spain, Portugal, and Africa, 1869. This—one of the most singular plants of the European flora—inhabits sandy shores and dry rocks by the sea and inland. The nature of the glandular hairs is different from that of the Droseras; their rigid pedicels not being endowed with the motive power of the British and other species of the genus just mentioned. "A still more anomalous character is to be found in the way the leaves are developed in the bud, being circinate and *revolute*, not involute, as in our Droseras, in ferns, cycads, and other plants; and of this mode of development *Drosophyllum* is, in so far as I know, the only example in the vegetable kingdom" (J. D. Hooker). (B. M. 5796.)

DRUMMONDIA. *See* **Mitella.**

DRUPACEÆ. Formerly regarded as a distinct natural order, but now as a section of *Rosaceæ.* The principal characters relied on to distinguish it reside in the fruit, which is a drupe, with a hard endocarp.

DRUPE. A succulent or fleshy fruit, consisting of a hard-shelled seed, as in Olive, Plum, and Cherry.

DRYANDRA (named after Jonas Dryander, a distinguished Swedish botanist; born 1748, died 1810). ORD.

Dryandra—*continued.*

Proteaceæ. A genus of about fifty species of handsome greenhouse evergreen shrubs, allied to *Banksia*, from which genus it is readily distinguished by the involucre, by the flat, or nearly flat, receptacle, and by the fruit. All are confined to Western extra-tropical Australia. They are very rarely seen in cultivation, notwithstanding their great beauty. For culture, *see* **Banksia.**

D. armata (armed).* *fl.-heads* yellow, terminal, closely surrounded by floral leaves longer than the flowers; involucre broadly ovoid or almost globular, ¾in. long; bracts at first villous, at length becoming glabrous; perianth above 1in. long, more or less villous; limb narrow, obtuse. *l.* 2in. to 3in. long, deeply pinnatifid with lanceolate or triangular pungent-pointed lobes, very rigid, flat or undulate, reticulately veined, and sometimes slightly tomentose beneath. Young branches tomentose. *h.* 2ft. to 4ft. 1803. SYN. *D. favosa.* (B. M. 3236.)

D. blechnifolia (Blechnum-leaved). A synonym of *D. pteridifolia.*

D. falcata (falcate). This closely resembles *D. armata* in foliage and inflorescence, but may be distinguished from that species by the glabrous perianth limb. Young branches usually tomentose and hirsute, with spreading hairs. *h.* 4ft. to 5ft. SYN. *Hemiclidia Baxteri* (under which name it is figured in B. R. 1455).

D. favosa (honeycombed). A synonym of *D. armata.*

D. nervosa (nerved). A synonym of *D. pteridifolia.*

D. nivea (snowy).* *l.*, upper side deep green, snowy-white beneath, 4in. to 8in. long, linear, pinnate, divided almost or quite to the midrib into numerous regular triangular segments. *h.* 2ft. to 3ft. 1805. A very ornamental foliage plant.

D. plumosa (feathery).* *l.* dark green on the upper side, pure white beneath, dense, linear-elongate, pinnatifid, 5in. to 10in. long and about ½in. broad. *h.* 3ft. 1803. A remarkably elegant plant for table decoration when in a young state.

D. pteridifolia (Pteris-leaved).* *fl.-heads* yellow, large, terminal, closely surrounded by long floral leaves; involucre hemispherical; bracts densely villous, the outer ones ovate, the inner ones lanceolate; perianth silky or loosely villous with long hairs. *l.* pinnately divided almost or quite to the midrib into numerous linear or lanceolate straight or falcate segments, ¾in. to 1½in. or even 2in. long, often distant, but usually dilated at the base and frequently confluent, all with recurved or revolute margins, more or less tomentose underneath. Stems very short and thick, densely tomentose and villous. *h.* 1½ft. SYNS. *D. blechnifolia* and *D. nervosa* (B. M. 3063). (B. M. 3500.)

D. seneciifolia (Senecio-leaved). *l.* deep green above, greyish-white beneath, linear, pinnatifid, 3in. to 4in. long; lobes very small, triangular. *h.* 2ft. to 3ft. Very desirable.

DRYAS (mythological; from *Dryades*, or nymphs of the Oaks; the leaves bear some resemblance to those of the Oak). ORD. *Rosaceæ.* A genus containing a couple of species of elegant dwarf hardy shrubby plants, natives of cold and Arctic regions of the Northern hemisphere. Flowers white or yellow, large. Leaves simple, petiolate, oblong, entire, crenate or sub-pinnatifid; margins recurved, shining above, downy beneath. They are of easy culture in a moist peat soil. Propagated by cuttings, by divisions, or from seed.

D. Drummondi (Drummond's).* *fl.* golden-yellow, about 1in. across; calyx covered with blackish glandular hairs. June. *l.* elliptic, rather attenuated at the base, deeply crenated, clothed with white tomentum beneath and on the scape. North America, 1800. A rare evergreen trailer. (B. M. 2972.)

D. octopetala (eight-petalled).* Mountain Avens. *fl.* white with yellow stamens, about 1in. or more across, solitary on erect peduncles. June. *l.* obovate or sub-cordate, crenately serrated, white and downy beneath. Northern hemisphere (Britain). (Sy. En. B. 459.)

DRYMODA (from *drymodes*, woody; plants epiphytal on branches of trees). ORD. *Orchideæ.* A genus which contains—so far as is at present known—only the species described below. It is one of the smallest and most curious of orchids, and, until it flowered at Kew in 1871, was only known by a drawing made by Griffiths in the Malayan Peninsula, in 1835. It grows in a warm house, on pieces of hard wood to which the bark remains attached.

D. picta (painted). *fl.* solitary, surmounting a slender scape 1in. to 1½in. long, proceeding from the rhizome under the preceding bulb; ¾in. long from the dorsal sepal to the lip, inclined or horizontal; dorsal sepal small, acute, yellow-green; lateral sepals yellow-green, with dull purple bands forming wings at the apex of a long, curved, green, purple-spotted stipe, which projects from the base of the column; the latter furnished with two long yellow purple-spotted wings. Pseudo-bulbs clustered, discoid, dull green, with a minute central mammilla from which springs a very deciduous leaf. Moulmein, 1871. (B. M. 5904.)

Drymoda—*continued.*

DRYMOGLOSSUM (from *drymos*, a wood, and *glossum*, a tongue; alluding to the place of growth and the form of the fronds). Wood Tongue Fern. ORD. *Filices.* A genus of small creeping stove ferns. Fronds dimorphous. Sori as in *Tænitis.* For culture, *see* **Ferns.**

D. carnosum (fleshy). *rhiz.* wide-creeping, filiform. *fronds*, barren ones sub-orbicular or elliptical, 1in. to 2in. long, ¾in. broad; fertile ones linear-spathulate, 2in. to 3in. long, ⅛in. broad, both narrowed to the base. *sori* in a line midway between the edge and midrib; when young, covered with stalked peltate scales. East Himalayas.

D. c. subcordatum (sub-cordate). A variety having smaller fronds (the barren ones roundish, sub-sessile), thinner texture, and the sori nearer the midrib. China and Japan.

D. piloselloides (Pilosella-like). *rhiz.* filiform, creeping. *fronds*, barren ones roundish, ½in. to 2in. long, ½in. to ¾in. broad; fertile ones linear-oblong, 2in. to 4in. long, ⅛in. to ¼in. broad; both are narrowed to the base. *sori* in a broad continuous submarginal line; the capsules mixed with stellate paraphyses. East Indies, &c., 1828. (H. G. F. 46.)

D. rigidum (rigid). *fronds*, barren ones 1in. to 1¼in. long, half as broad, obovate, entire, with thickened edges, on firm erect stems 1in. long; the fertile ones 4in. to 5in. long, ⅛in. broad, narrowed into a stem about as long as itself. *sori* in a deep groove between the broad midrib and edge. Borneo.

DRYMONIA (from *drymos*, an Oak wood, in allusion to the plant growing on trees in woods). ORD. *Gesneraceæ.* Stove prostrate radicant shrubs, or climbing upon trees. Flowers whitish or yellowish, on short axillary peduncles, often solitary. Leaves opposite, serrated, petiolate. There are about fourteen species, all natives of the tropical parts of the Western hemisphere. For culture, *see* **Besleria.**

D. bicolor (two-coloured). *fl.* purple; calyx large, green; limb of corolla sharply serrulated. *l.* oblong, acuminated at both ends, hairy, toothed. West Indies, 1806. Climbing shrub. (B. R. 1838, 4.)

D. marmorata (spotted).* *fl.* creamy-white, axillary, fimbriated. *l.* large, opposite, 6in. long by 3½in. wide, dark green, with the convex portions between the veins of a glistening-grey; margin crenate; under surface purplish; petioles long, reddish. Guiana (?). An erect-growing species, with obscurely tetragonal stems. (B. M. 6763.)

D. punctata (spotted-flowered). *fl.* yellow, violet. May. Guatemala, 1843. Evergreen climber. (B. M. 4089.)

D. Turialvæ (Turialva).* *fl.* white, large, pendulous; lower lobe toothed and lip-like; calyx of a dull red colour; racemes axillary. *l.* broadly ovate, bullate, of a beautiful metallic shade. Veragua, 1870. A tall sub-shrubby plant. (I. H. 1869, 603.)

DRYMOPHLOEUS (from *drumos*, wood, and *phloios*, bark; application not stated). ORD. *Palmeæ.* A genus of about a dozen species of unarmed stove palms, with slender ringed trunks, natives of New Guinea, tropical Australia, and the Pacific Islands. Flowers monœcious, in branched panicles; spadices springing from the trunk below the crown of leaves. Leaves terminal, regularly pinnatisect; segments cuneate-oblong or linear. For culture, *see* **Ptychosperma.**

D. oliviæformis (Olive-formed). *fr.* olive-shaped, reddish. *l.*, segments cuneate-oblong, erose-dentate at the apex; terminal one larger, fan-shaped. Stem 20ft. to 30ft. high, 3in. to 4in. thick. Moluccas. SYN. *Ptychosperma Rumphii.*

D. ceramensis, *D. Rumphii*, and *D. singaporensis* are also in cultivation.

DRYNARIA. *See* **Polypodium.**

DRYOBALANOPS (from *drys*, a tree, *balanos*, an acorn, and *ops*, appearance; in allusion to the species being a tree bearing acorn-like fruits). Camphor-tree. ORD. *Dipterocarpeæ.* A large resinous camphor-bearing stove evergreen tree, native of Sumatra.

D. aromatica (aromatic). *fl.* yellow, in panicles. *l.* obtusely acuminated, elliptic, entire, coriaceous, shining. *h.* 100ft. This tree furnishes a liquid called Camphor Oil, and a crystalline solid known as Sumatra Camphor. It is highly prized by the Chinese.

DRYOPTERIS. *See* **Nephrodium.**

DRYOSTACHYUM. *See* **Polypodium.**

DRYPETES (from *drypto*, to lacerate; referring to its spiny nature). ORD. *Euphorbiaceæ*. A genus of about nine species of ornamental stove evergreen shrubs, natives of Brazil, the West Indies, and Florida. They thrive in a compost of peat and loam. Cuttings root in sandy loam, if placed under a glass, in heat.

D. crocea (saffron-coloured). *fl.* orange. June. *l.* alternate, oval or elliptical, pointed, coriaceous. *h.* 6ft. West Indies, 1820. SYN. *Schæfferia lateriflora*.

DRYPIS (the old Greek name used by Theophrastus, from *drypto*, to tear, on account of the leaves being armed with stiff spines). ORD. *Caryophylleæ*. A very pretty little herbaceous perennial, admirably adapted for ornamenting rockwork, where it becomes suffruticose, and produces an immense number of flowers. Increased either by cuttings, placed in sandy soil, under a hand glass; or by seeds, sown in a light compost. When seedlings are of sufficient size, they should be separated and planted on the top of rockwork, care being taken to keep them watered until fresh roots are emitted.

D. spinosa (prickly).* *fl.* pale pink or white, corymbose; bracts with three teeth on each side. June. *l.* stiff, awl-shaped, somewhat trigonal, mucronate. Stems at first procumbent, four-sided; flowering stems erect. *h.* 6in. South Europe, &c., 1775. (B. M. 2216.)

DRY-ROT. A name given to decayed timber, caused by different species of Fungi, which, under certain conditions, attack woodwork in ships, houses, &c., penetrating the wood in all directions, and in many instances doing irreparable damage before they are observed. Two of the principal species of Fungi causing Dry-rot are: *Merulius lacrymans*, attacking wood in houses and other buildings; *Polyporus hybridus*, affecting oak-timber in ships.

DUBOISIA (named after Louis Dubois, author of several botanical works). ORD. *Solanaceæ*. A small, glabrous, greenhouse tree. It thrives in sandy loam and peat. Cuttings strike readily under a bell glass.

D. myoporoides (Myoporum-like). *fl.* white, in axillary clusters; calyx two-lipped; corolla funnel-shaped, the limb five-parted. Berry indehiscent. *l.* entire. *h.* 6ft. to 15ft. New South Wales, &c.

DUBREUILIA. A synonym of **Pilea.**

DUCKMEAT, or DUCKWEED. *See* **Lemna.**

DUCK'S FOOT. *See* **Podophyllum.**

DULCAMARA. *See* **Solanum Dulcamara.**

DUMASIA (named in honour of M. Dumas, one of the editors of "Annales des Sciences Naturelles"). ORD. *Leguminosæ*. A genus of three species of ornamental greenhouse evergreen twiners. Flowers yellow, disposed in axillary racemes. Leaves pinnately trifoliolate, stipellate. For culture, *see* **Clitoria.**

D. villosa (villous). *fl.* yellow; racemes axillary. August. *l.*, leaflets ovate. Branches, petioles, peduncles, and leaves pubescent. Tropical Asia, &c., 1824. (B. R. 961.)

DUMB CANE. *See* **Dieffenbachia Seguine.**

DUMERILIA (of Lessing). A synonym of **Perezia.**

DUPERRYA. A synonym of **Porana.**

DURAMEN. Heartwood. That part of the timber of a tree which becomes hardened by matter deposited in it. It is next the centre in Exogens, and next the circumference in Endogens.

DURANTA (named in honour of Castor Durantes, a physician and botanist, who died in 1590). ORD. *Verbenaceæ*. A genus of four or five species of rather pretty free-flowering stove evergreen shrubs, with blue flowers. Probably the only one in cultivation is *D. Plumieri*. All are natives of the Western hemisphere. Cuttings strike readily in heat, and should be inserted early in spring, and the young plants afterwards grown on in a stove temperature, using for potting a compost of peat and loam in equal proportions.

Duranta—*continued.*

D. Ellisia (Ellisia). A synonym of *D. Plumieri*.

D. Plumieri (Plumier's).* *fl.* pretty blue, borne in great profusion in racemes towards the ends of the branches; calyces in fruit twisted. August. *l.* oblong-lanceolate, acuminate. Branches spinose. *h.* 6ft. to 15ft. South America and the West Indies, before 1739. SYN. *D. Ellisia*. (B. M. 1759.)

DURIO (*Duryon* is the name of the fruit in the Malay language, and comes from *dury*, a thorn; alluding to the prickly fruit). ORD. *Malvaceæ*. A large stove evergreen tree, the fruit of which is about the size of a man's head, and, by those who have overcome its civet odour and turpentine flavour, is ranked among the most delicious of Indian fruits. The only species of the genus thrives well in a compost of peat, loam, and leaf mould. Cuttings of firm young shoots root readily in spring, in sand, if placed under a glass, and in bottom heat.

D. zibethinus (civet). *fl.* white. *l.* oblong, acuminated, rounded at the base, of a lurid-silvery colour beneath, where they are covered with brownish scales. *h.* 80ft. 1825. Native of Malaya and the Indian Archipelago. The fruit of this plant is used, when in a decomposed state, as a bait to trap the civet-cat; hence the specific name.

DUTRA. *See* **Datura.**

DUVALIA (named after H. A. Duval, of Paris, author of "Enumeratio Plantarum Succulentarum in Horto Alenconio"). ORD. *Asclepiadaceæ*. A genus of succulent Stapelia-like plants, all natives of South Africa. Corolla with the segments more or less replicate, and an elevated annulus (orb) on the disk; outer corona flat, entire, pentagonal, disk-like; inner corona of five small, entire, horizontal, ovoid, pointed, fleshy segments, somewhat resembling a bird's head when viewed sideways. Those mentioned below are among the most distinct. Several species appear to have become quite lost to cultivation.

D. Corderoyi (Corderoy's).* *fl.* olive-green, with darker tips, or dull reddish-brown, 1½in. to 2in. in diameter; lobes of corolla lanceolate-acuminate, fringed with clavate mauve-purple hairs; annulus clothed with soft hairs of the same colour. Branches sub-globose, crowded, flowering at their sides. (B. M. 6082.)

D. elegans (elegant). *fl.* dark purple-brown, shining, small; corolla lobes ovate, shortly acuminate, shortly pilose on the surface and ciliate with soft dark purple hairs; annulus only slightly raised, giving the flower a flat look. Branches oblong or ovoid, crowded, flowering at their sides. (B. M. 1148.) 1795.

D. Jacquiniana (Jacquin's). *fl.* dark purple-brown, opaque, small; corolla lobes lanceolate, acute, strongly replicate, glabrous, but ciliate with simple or slightly clavate hairs. Branches oblong, crowded, flowering at their sides. 1802.

D. polita (polished).* *fl.* three or four together, opening successively; pedicels about 1in. long, glabrous; corolla 1in. in diameter; lobes ovate-acuminate, erect-spreading, a little recurved at the apex, brownish-purple, very smooth and polished, the margins very slightly folded back and fringed towards their base with long purple vibratile, clavate, purple hairs; annulus minutely scabrid, paler than the lobes, and opaque; outer corona chocolate-red, or dark purplish-red; processes of inner corona dull orange. Summer. Stems and branches elongate, 2in. to 3in. long, about ½in. thick, somewhat clavate, more or less decumbent and rooting, glabrous, dull green or purplish, six-angled; angles obtuse, toothed. 1874. One of the finest plants of the genus. (B. M. 6245.)

DUVAUA (named in honour of M. Aug. Duvau, a French botanist, publisher of the original edition of Richard's "Démonstrations botaniques, ou analyse du fruit considéré en général"). ORD. *Anacardiaceæ*. Handsome half-hardy evergreen shrubs, with bright shining foliage. Flowers yellowish; racemes axillary, short, many-flowered, solitary or fasciculated. Leaves simple, alternate, exstipulate. There are four species, natives of extra-tropical South America. They thrive in a dry and sandy soil and in a sheltered situation, having its surface sloping to the south. Cuttings, made of the ripe wood, root, if inserted under a bell glass, in gentle heat.

D. dependens (hanging). *fl.* yellowish-white; racemes axillary, scarcely exceeding the leaves in length. June, July. Berries black. *l.* mostly obovate, and very obtuse, or even emarginate, with scarcely any denticulations. *h.* 10ft. to 12ft. 1790. Usually grown as a wall shrub. (B. R. 1573.)

Duvaua—*continued.*

D. latifolia (broad-leaved). *fl.* greenish-white; racemes dense, the length of the leaves. June, July. Berries black. *l.* oblong, acute, coarsely toothed, so waved as to seem in some measure plicate. *h.* 6ft. to 12ft. 1826. (B. R. 1580.)

D. ovata (ovate). *fl.* yellowish-white; racemes a little longer than the leaves. June. Berries black. *l.* ovate, toothed, mostly acute at the tip, some obtuse. *h.* 6ft. to 10ft. 1825. (B. R. 1568.)

DWALE. *See* **Atropa Belladonna.**

DWARF CYPRESS. *See* **Chamæcyparis.**

DWARF ELDER. *See* **Sambucus Ebulus.**

DWARF FAN-PALM. A common name of **Chamærops humilis** (which *see*).

DYCKIA (named after Prince Salm-Dyck, a German botanist, and author of a splendid work on succulent plants). ORD. *Bromeliaceæ.* A genus of greenhouse succulents, with elegant foliage and ornamental habit of growth, usually stemless. There are about half-a-dozen species, natives of Brazil. They are best grown with Agaves, and thrive well in a mixture of two parts loam, and one part vegetable mould, to which a little sand may be added. Perfect drainage is essential, and water must be liberally applied during summer; but in winter, a very small quantity will suffice. Propagated by suckers.

D. argentea (silvery).* *l.* long, rigid, rosulate, recurved, lying very close together, about 2ft. long, and rather less than 1in. broad, tapering to a point, toothed at the edges; both surfaces densely covered with white scales, and thus imparting a covering like hoar-frost. A rare species.

D. brevifolia (short-leaved). *fl.* yellow; spike about 1ft. long. *l.* about thirty in a dense rosette, the young ones of the centre erect, the outer ones recurved; when fully mature, about 4in. long. 1869. (Ref. B. 236.)

D. frigida (cold). *fl.* orange-yellow, very numerous, nearly 1in. long; spike branched, covered with pale down. February. *l.* tufted, linear-lanceolate, spine-toothed, recurved, 1ft. to 2ft. long. 1877. SYN. *Pourretia frigida.* (B. M. 6294.)

D. rariflora (scattered-flowered). *fl.* orange, in spikes, with appressed membranaceous bracts. Summer. *l.* radical, lanceolate, pointed, narrow, rigid, recurved, greyish-green; margin with distant spines. *h.* 2ft. 1832. In warm, sheltered situations of rockwork, this very interesting species may be found useful. (B. M. 3449.)

DYER'S GREENWEED. *See* **Genista tinctoria.**

DYER'S ROCKET. *See* **Reseda Luteola.**

DYER'S WEED. *See* **Reseda Luteola.**

DYER'S YELLOW-WEED. *See* **Reseda Luteola.**

DYPSIS (from *dupto*, to dip; application not given). ORD. *Palmeæ.* A genus of five or six species of unarmed dwarf stove palms, all natives of Madagascar. Flowers monœcious, in branched panicles. Males with membranous, orbicular sepals, and ovate, acute, valvate petals; stamens six, the linear filaments connate at the base. Females smaller than the males, sub-globose, with membranous broadly imbricated sepals, and convolute imbricate petals. Spadices long, lax-flowered. Stems reed-like, surmounted by a crown of leaves, entire or bifid at the apex, or pinnatisect; segments cleft, or præmorsely dentate. The species in cultivation are: *Hildebrandtii*, *madagascariensis*, and *pinnatifrons.*

DYSODA. A synonym of **Serissa** (which *see*).

DYSODIA from *dusodes*, ill-smelling; in allusion to the unpleasant odour of some of the species). ORD. *Compositæ.* A genus of about ten species of erect or diffuse, glabrous or pubescent herbs, natives of Mexico and Central America. Flower-heads heterogamous, radiate; ray-florets female; disk fertile; involucre cylindrical, campanulate, or almost hemispherical, composed of one series of sub-equal, rigidly membranaceous bracts. Leaves opposite or alternate, more or less pinnatifid. The species thrive in well-drained loamy soil, in greenhouse temperature. Readily propagated by seeds, sown in spring; by division of the roots; or by cuttings.

Dysodia—*continued.*

D. grandiflora (large-flowered). *fl.-heads* rich deep orange. *l.* opposite, ovate, acuminate, inciso-serrate. *h.* 1ft. to 2ft. A handsome perennial. SYNS. *Clomenocoma montana*, *Comaclinium aurantiacum.* (B. M. 5310.)

D. pubescens (pubescent). The correct name of the plant described in this work as *Bœbera incana.*

E. In composition, this letter signifies without; thus, *ebracteate*, without bracts.

EARED. Auriculate; having ears or appendages.

EARINA (from *earinos*, the spring; in reference to the time of flowering). ORD. *Orchideæ.* A genus of about six species of epiphytal orchids, from the Pacific Islands and New Zealand. They have small flowers, crowded into sessile heads; the lateral sepals and foot of the column forming a chin. *E. mucronata* (sharp-pointed) and *E. autumnalis* (autumnal) are two greenhouse species, from New Zealand. For cultivation, *see* **Oncidium.**

EARTH. *See* **Soil.**

EARTHING-UP. A term used to represent the process of drawing the existing, or applying additional, soil in ridges round the stems of kitchen-garden crops, or other surface-rooting plants, requiring more space for the development of the leaves than for the roots. It is performed in this case in order to concentrate the soil where it is most required. Earthing-up round the stems of Celery and similar crops is practised mainly for the exclusion of light from the stems, and for the consequent blanching obtained. The plan is also frequently adopted in winter, for preserving the stems of plants from frost.

EARTH NUT, or **EARTH PEA.** *See* **Arachis hypogæa.**

EARWIGS (*Forficula auricularia*). These very destructive insects constitute an anomalous tribe, and are generally placed in the order *Dermaptera.* They are injurious, not only to many flowering plants, but also to ripe fruit. Amongst the latter, those most attacked are the Apricot and Peach. At certain times, Earwigs migrate from place to place in vast numbers; and this fact is sufficient to account for their extreme abundance at one season, and their scarcity at another. In the common

FIG. 685. EARWIG.

species (see Fig. 685), the beautiful wings are neatly folded under very short and truncate elytra; and at the end of the body are formidable forceps, for the purpose of folding and unfolding the large and fragile wings after, and previous to, flight. The Earwig is comparatively small, measuring only some three-quarters of an inch. Unlike most other insects, the female, after laying her eggs, does not leave them, but actually broods over them, as a bird does over its eggs, and even sits on the young ones after hatching. Disliking moisture, these pests are more commonly found in dry, hot positions than in damp ones. Among the young flower-heads of Chrysanthemums and Dahlias, and various other flowers, they commit great damage. There is no poisonous application that gives really good results; consequently, traps must be resorted to.

Traps. These are of numerous kinds, but for all practical purposes the following will be found sufficient. Beanstalks, or hollow stems of any suitable kind of plant, if cut into lengths of from 6in. to 9in., and placed amongst the infested plants, or in the branches of fruit-trees, will catch a large number. Flower-pots, partly filled with dry moss, and either inverted or laid on their sides, may also be

Earwigs—*continued.*

used effectively. In all cases, the traps must be frequently examined, and the enemy shaken out into a vessel containing boiling water.

EBENACEÆ. A natural order of trees or shrubs, containing about six genera and some 250 species, natives, for the most part, of warm regions. Flowers hermaphrodite, or staminate and pistillate; calyx three to seven-cleft, persistent; corolla three to seven-cleft. Leaves alternate, rarely opposite, entire, coriaceous, exstipulate. Some of the trees of this order furnish valuable timber, the heart-wood of several species constituting the ebony of commerce. The best-known genera are: *Diospyros*, *Euclea*, *Maba*, *Royena*, and *Tetraclis*.

EBENUS (from *ebenos*, ebony). ORD. *Leguminosæ*. A genus of about eight species of elegant little herbs or sub-shrubs, chiefly confined to the Mediterranean region and Asia Minor, though one species is found as far east as Beloochistan. Flowers pink, in dense spikes or round heads; peduncles axillary or terminal. Leaves usually unequally pinnate, made up of three to five pairs of lance-shaped leaflets, though in a few they are digitate or simple. For culture, &c., *see* **Anthyllis.**

E. cretica (Cretan). *fl.* reddish or purple, in ovate-cylindrical spikes; staminiferous tube elegantly striated. June, July. *l.* rarely trifoliate, usually impari-pinnate, with two pairs of leaflets and an odd sessile one; leaflets oblong-linear; stipules connected, and therefore bifid at the apex and opposite the leaves. *h.* 1ft. to 2ft. Candia, 1737. Shrubby species. SYN. *Anthyllis cretica*. (B. M. 1092.)

E. pinnata (pinnate). A synonym of *E. Sibthorpii*.

E. Sibthorpii (Sibthorp's).* *fl.* in spherical spikes; corolla purplish, about equal in length to the calyx; bracts three or four, broad, ovate, appearing like an involucre at the base of each head of flowers. *l.* impari-pinnate, with four or five pairs of oblong-linear, mucronate leaflets; stipules distinct, acuminate, bifid. Stem clothed with adpressed pubescence. Mounts Atlas and Parnassus. Herbaceous. SYN. *E. pinnata*. (S. F. G. 740.)

EBERMAIERA (named in honour of Karl Heinrich Ebermaier, 1767-1825, a German writer on medicinal plants). ORD. *Acanthaceæ*. A genus of about thirty species of stove herbs, widely distributed throughout the tropical regions of both hemispheres. They require similar treatment to **Eranthemum** (which *see*).

E. nitida (shining). *fl.* white. *l.* glossy, convex. *h.* 4in. Brazil, 1879. A curious little plant, resembling *Fittonia* in habit. SYN. *Chamæranthemum nitidum*.

EBONY. *See* **Diospyros Ebenus.**

EBRACTEATE. Without bracts.

ECBALLIUM (from *ekballein*, to cast out; the seeds are violently ejected from the ripe fruit). Squirting Cucumber. ORD. *Cucurbitaceæ*. A hardy annual. For cultivation, *see* **Gourds.**

E. Elaterium (squirting). *fl.* yellow, on erect bracteate peduncles. June. *fr.* green, expelling the seeds when ripe. *l.* cordate, somewhat lobed, crenate-toothed, on long petioles. Stems dwarf, without tendrils. Mediterranean region, 1548. Plant scabrous, hispid, and glaucescent; trailer. The drug known as Elaterium (a powerful cathartic) is procured from this plant. SYN. *Momordica Elaterium*. (B. M. 1914.)

ECCREMOCARPUS (from *ekkremes*, pendent, and *karpos*, fruit; in allusion to the fruit). ORD. *Bignoniaceæ*. A genus of elegant half-hardy evergreen climbers. Flowers yellow, red, or golden, tubular, divided into five equal lobes. Leaves opposite, bipinnatisect, terminating in a branched tendril. Stem shrubby. *E. scaber* is a very popular plant, and proves perfectly hardy in sheltered situations, in the southern counties; also in more northern ones, when the winters are not exceptionally severe. They thrive in any light fertile soil. Seeds may be sown in March, in a gentle heat, and flowers will be produced during the latter part of the same year.

Eccremocarpus—*continued.*

E. longiflorus (long-flowered).* *fl.*, corolla yellow, with a green limb, tubular, a little arched; peduncles pendulous, opposite the leaves, many-flowered. July. *l.* opposite, abruptly bi-tripinnate; leaflets oval, entire, sessile. Peru, 1825.

FIG. 686. SPRAYS OF ECCREMOCARPUS SCABER in Flower and Fruit.

E. scaber (rough).* *fl.*, corolla scarlet or deep orange-red, with a ventricose throat; racemes opposite the leaves, pedunculate, secund, many-flowered. July, August. *l.* opposite, petiolate, abruptly bipinnate; leaflets alternate, obliquely cordate, ovate, serrated or entire. Stems angular, hairy. Chili, 1824. A useful plant for covering walls, trellises, and pillars. SYN. *Calampelis scabra*. See Fig. 686. (B. R. 939.)

ECHARDIA. A synonym of **Peristeria.**

ECHEVERIA. Included under **Cotyledon.**

FIG. 687. ECHINACEA PURPUREA INTERMEDIA, showing Habit and single Flower-head.

ECHIDNIUM (from *echidnion*, a young viper; in allusion to its relationship to *Dracontium*). ORD. *Araceæ*. A genus of a couple of species of stove tuberous-rooted perennials, included under *Dracontium* by Bentham and Hooker. For culture, *see* **Anchomanes.**

Echidnium—*continued.*

E. Regelianum (Regel's). *fl.* purplish-brown; spathe sub-erect; spadix cylindrical; peduncle partly adnate to the spathe. June. *l.* tripartite, deep green. *h.* 1½ft. to 3ft. Brazil, 1866. SYN. *E. Spruceanum*, of gardens. (R. G. 503.)

E. Spruceanum (Spruce's). A garden synonym of *E. Regelianum.*

ECHIDNOPSIS (from *echidne*, a viper, and *opsis*, appearance; alluding to the stems). ORD. *Asclepiadaceæ.* A greenhouse, fleshy, leafless, perennial herb. For culture, *see* **Stapelia.**

E. cereiformis (Cereus-like). *fl.* bright yellow, small, in fascicles; calyx tube hemispheric, with five triangular, acute, spreading and recurved lobes; corolla broadly rotate-campanulate. Stem elongated, cylindrical, obtuse, cernuous or pendulous, areolate. *h.* 6in. Abyssinia, 1871. (B. M. 5930.)

ECHINACEA (from *echinos*, a hedgehog; referring to the prickly scales of the receptacle). ORD. *Compositæ.* Ornamental hardy herbaceous perennials, with generic characters scarcely distinct from *Rudbeckia*, in which genus it is included by Bentham and Hooker. Echinaceas form excellent subjects for mixed borders and sub-tropical gardens. The species thrive best in warm, sunny situations, and in a compost of deep rich loam and leaf mould. They are readily propagated by divisions.

E. angustifolia (narrow-leaved).* *fl.-heads* light purple or rose, 4in. to 6in. across. Summer. *l.* lanceolate, hairy, 4in. to 6in. long, ½in. broad. Stem hairy below. *h.* 2ft. to 4ft. United States, 1861. (B. M. 5281.)

E. purpurea (purple).* *fl.-heads* reddish-purple, paling off at the tips to a greyish-green, about 4in. across; peduncle long, thick, rigid, producing a solitary terminal flower-head. Summer, autumn. *l.* roughish, obscurely dentate; radical ones ovate-lanceolate; cauline ones more lanceolate, tapering at the base. Stem smooth. *h.* 3ft. to 4ft. United States, 1799. (B. M. 2, under the name of *Rudbeckia purpurea.*)

E. p. intermedia (intermediate) comes very near *E. purpurea.* It differs principally in the more spreading ray-florets. *h.* 2ft. to 4ft. See Fig. 687. (P. M. B. xv. 79.)

E. p. serotina (late-flowering) is a hirsute or hispid form of *E. purpurea.* (L. B. C. 1539.)

ECHINANTHUS. *See* **Echinops.**

ECHINATE. Covered with prickles, like a hedgehog.

ECHINOCACTUS (from *echinos*, a hedgehog, and *Cactus*; plants beset with spines like a hedgehog). Hedgehog Thistle. ORD. *Cacteæ.* A large genus of simple, grotesque, fleshy, ovoid or globose, ribbed, leafless, succulent plants. Flowers usually rising from the fascicles of spines at the tops of the ribs; sepals numerous, imbricated, united into a short tube, adnate to the base of the ovary; outer ones bract-like; inner ones petaloid, elongated, spreading. About 200 forms have been described. They are dispersed from Texas and California to Peru and Brazil, but are most numerous in Mexico. For culture, *see* **Cactus.**

E. centeterius (many-spined). *fl.* deep straw-colour, with reddish streaks down the centre; nearly 3in. across; anthers yellow. July. Plant sub-globose; tubercles in fifteen nearly vertical series, confluent, oblong; areolæ oval, white, tomentose; outer ten prickles slender, central four stronger. *h.* 6in. Mexico, 1840. (B. M. 3974.)

E. concinnus (neat). *fl.* yellow. Spring. Plant globose, depressed, glaucescent, with about ten ribs, which are obtuse and sinuately crenated; areolæ remotish, woolly; spines setaceous, eight to ten, one of which is longer and stronger. *h.* 6in. Mexico (?), 1828. (B. M. 4415.)

E. corynodes (helmet-flowered). *fl.* rich sulphur-yellow, 2in. in diameter when fully expanded, several from the crown of the plant; tube externally shaggy with brown wool; petals in two or three rows, spathulate, crenate and almost laciniated towards the apex; stamens numerous, pale yellow, crowded around the style; stigma with the rays erect, bright scarlet. Summer. Plant sub-globose, but depressed at the top, and narrowed at the base, deep somewhat glaucous green. The sides are cut into about sixteen deep, vertical furrows, and as many prominent, crenated ridges; the crenatures are from ½in. to ¾in. apart, and in them is lodged a tuft of dense white wool, from which arise seven to nine spreading, rigid, pale brown spines, together with a central erecto-patent one, usually of a uniform deep brown colour. *h.* 2in. to 3in. Mexico (?), 1837. A very showy species. (B. M. 3906.)

E. crispatus (curled). *fl.* purplish. Summer. Plant obovate or sub-globose, truncate or depressed at summit; sides cut

Echinocactus—*continued.*

into about a score of vertical, narrow, undulated ridges; young areolæ with deciduous white tomentum; outer spines eight or nine, spreading, setaceous, white, with a brown point; four central ones reddish, much larger. See Fig. 688, for which we are indebted to Herr Fr. Ad. Haage, jun., of Erfurt.

FIG. 688. ECHINOCACTUS CRISPATUS.

E. Cummingii (Cumming's). *fl.* golden-yellow, 1in. in diameter, with a funnel-shaped tube, numerous, sessile. June. Plant nearly globose, greyish-green, contracted slightly at the base; tubercles about ½in. in diameter, arranged in spirals, sub-hemispherical; areolæ small, nearly circular; outer spines about fifteen to twenty, strict, slender, erecto-patent, pale yellowish, the upper rather the longest, central two or three shorter and stouter. *h.* 3in. Bolivia, 1847. (B. M. 6097.)

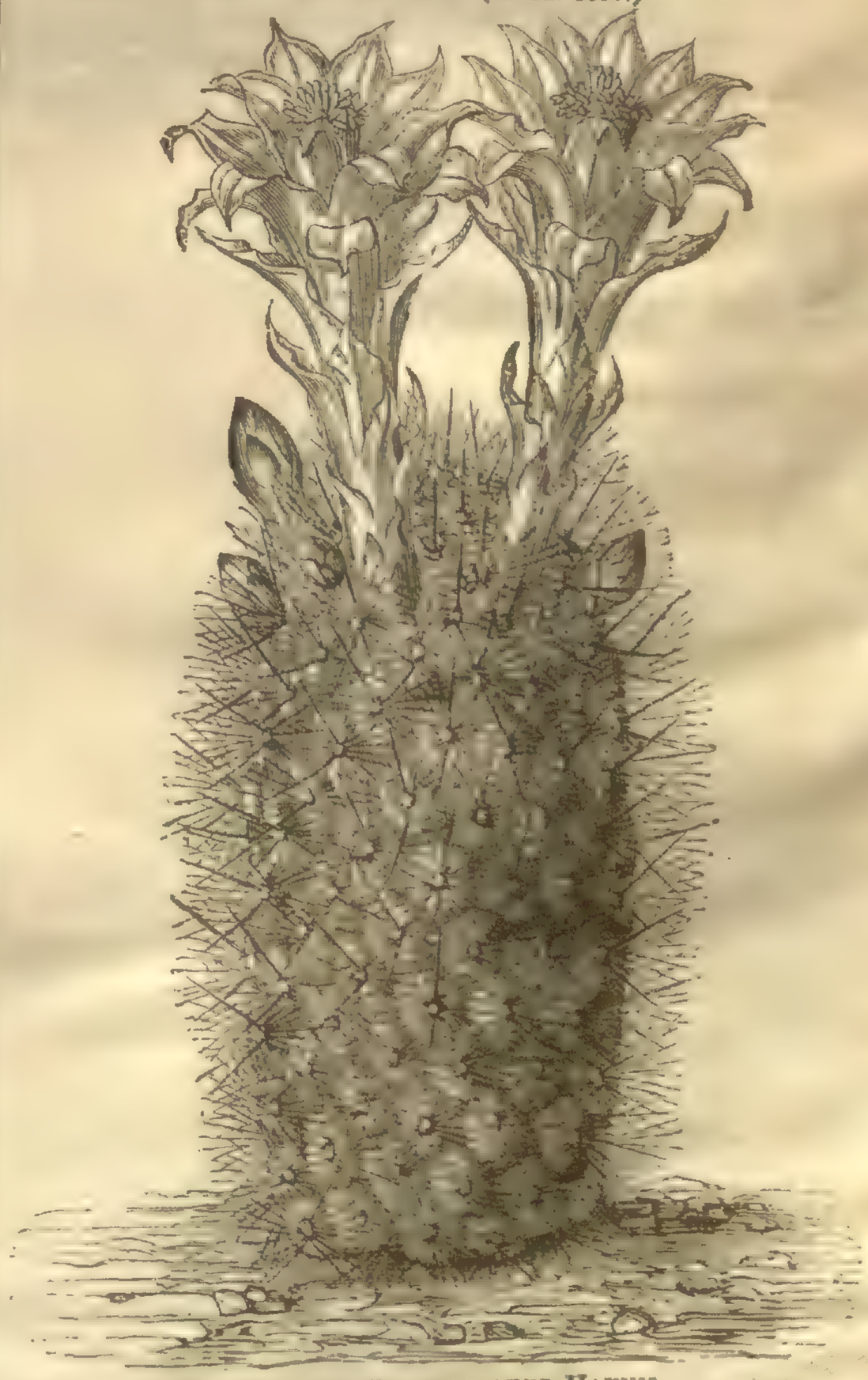

FIG. 689. ECHINOCACTUS HAYNII.

E. gibbosus (gibbous). *fl.* white. July. Plant roundish, deeply sixteen-angled; angles with a remarkable swelling below each parcel of spines. *h.* 6in. West Indies and Central America, 1808. (B. R. 137.)

Echinocactus—*continued.*

E. g. nobilis (noble). *fl.* white. July. Plant deep glossy olive-green, oblong, with fewer angles than in the type; angles and spines middle-sized, straight. *h.* 2ft. Mexico, 1796.

E. Haynii (Hayne's). *fl.* brilliant purple-red, very large. Stem cylindrical, light green; twenty-five or more ribs with rounded edges; areolæ small, oval, with pearly-grey tomentum; spines very numerous, greyish, with brown points. *h.* 6in. to 12in. Peru. See Fig. 689.

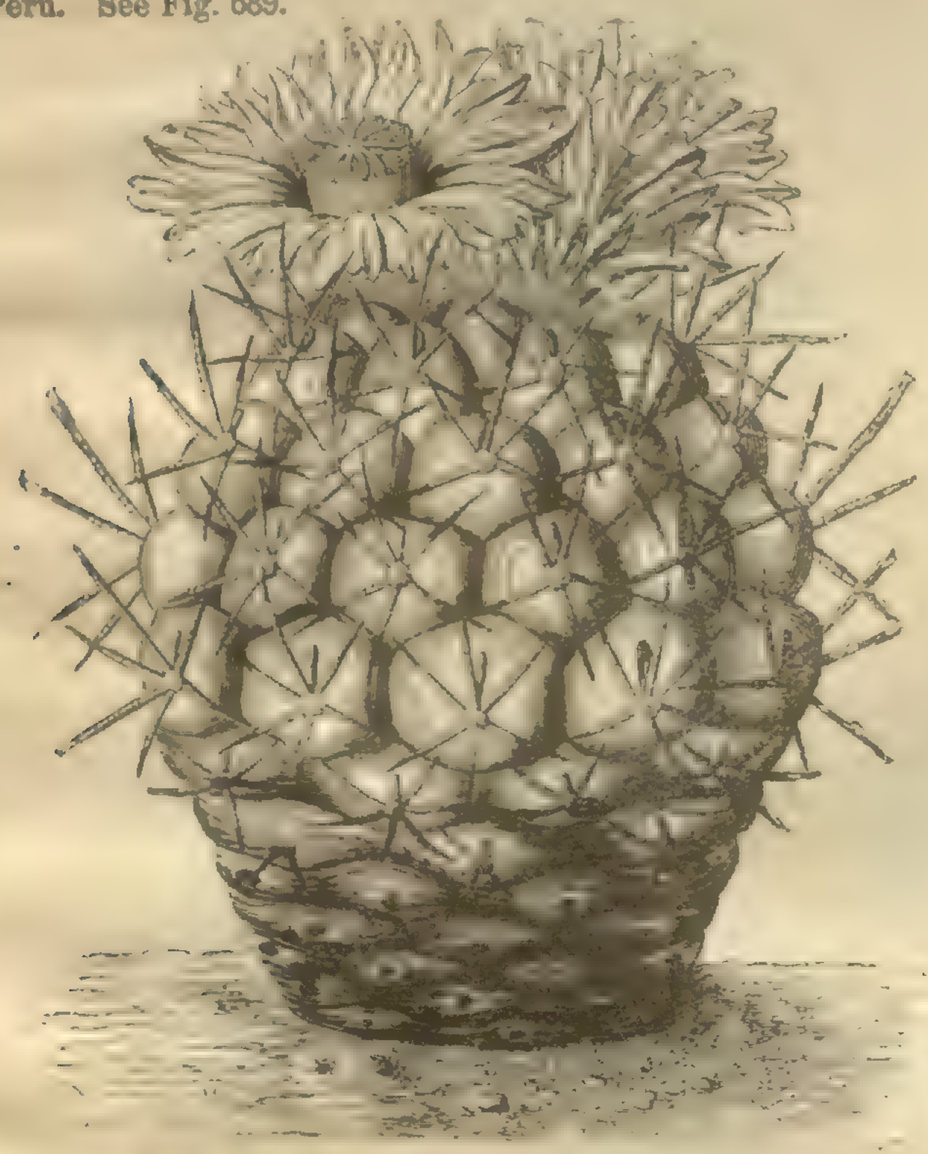

FIG. 690. ECHINOCACTUS HEXÆDROPHORUS.

E. hexædrophorus (hexædron). *fl.* white and pale red. June. Plant globose, glaucous, flat at top, tuberculate; tubercles hexædrous, disposed in two series, vertical and spiral; areolæ immersed, tomentose; spines four to seven, radiating, unequal, central one longer and stronger. *h.* 6in. North Mexico. See Fig. 690. (B. M. 4311.)

FIG. 691. ECHINOCACTUS LE CONTEI.

E. Le Contei (Le Conte's). *fl.*, petals lemon-yellow, with a brownish tint along the midrib. Plant ovate or cylindrical. Ribs twenty to thirty, compressed, sub-obtuse, interrupted; areolæ elongate-oblong; four principal central spines 2in. to 2½in. long; lateral ones more quadrangular. Mexico. A gigantic species, sometimes attaining a height of 5ft., and a diameter of 2ft. See Fig. 691, for which we are indebted to Herr Fr. Ad. Haage, jun.

E. longihamata (long-hooked). *fl.* yellow. July. Plant subglobose, green, thirteen angled. Ribs strong, acutish areolæ large, oblong, shortly woolly; outer nine prickles straight, radiating, inner four strong, upper three straight; central one long, flattened, hooked. *h.* 3in. Texas and Mexico, 1836. (B. M. 4632.)

E. multiflorus (many-flowered). *fl.* white, large. July. Plant globose, rather glaucous, tuberculate, hardly ribbed; tubercles large, mammæform, disposed in an irregular vertical series; areolæ tomentose; prickles five, strong, recurved, nearly equal. *h.* 1½in. Probably native of Mexico. (B. M. 4181.)

Echinocactus—*continued.*

E. myriostigma (many-dotted). *fl.* pale straw-coloured, rising from the umbilicate top of the plant. July. Plant roundish-oblong, five or six-ribbed; ribs prominent; areolæ approximate, woolly, unarmed. *h.* 1ft. Mexico, 1843. SYN. *Astrophytum myriostigma.* (B. M. 4177.)

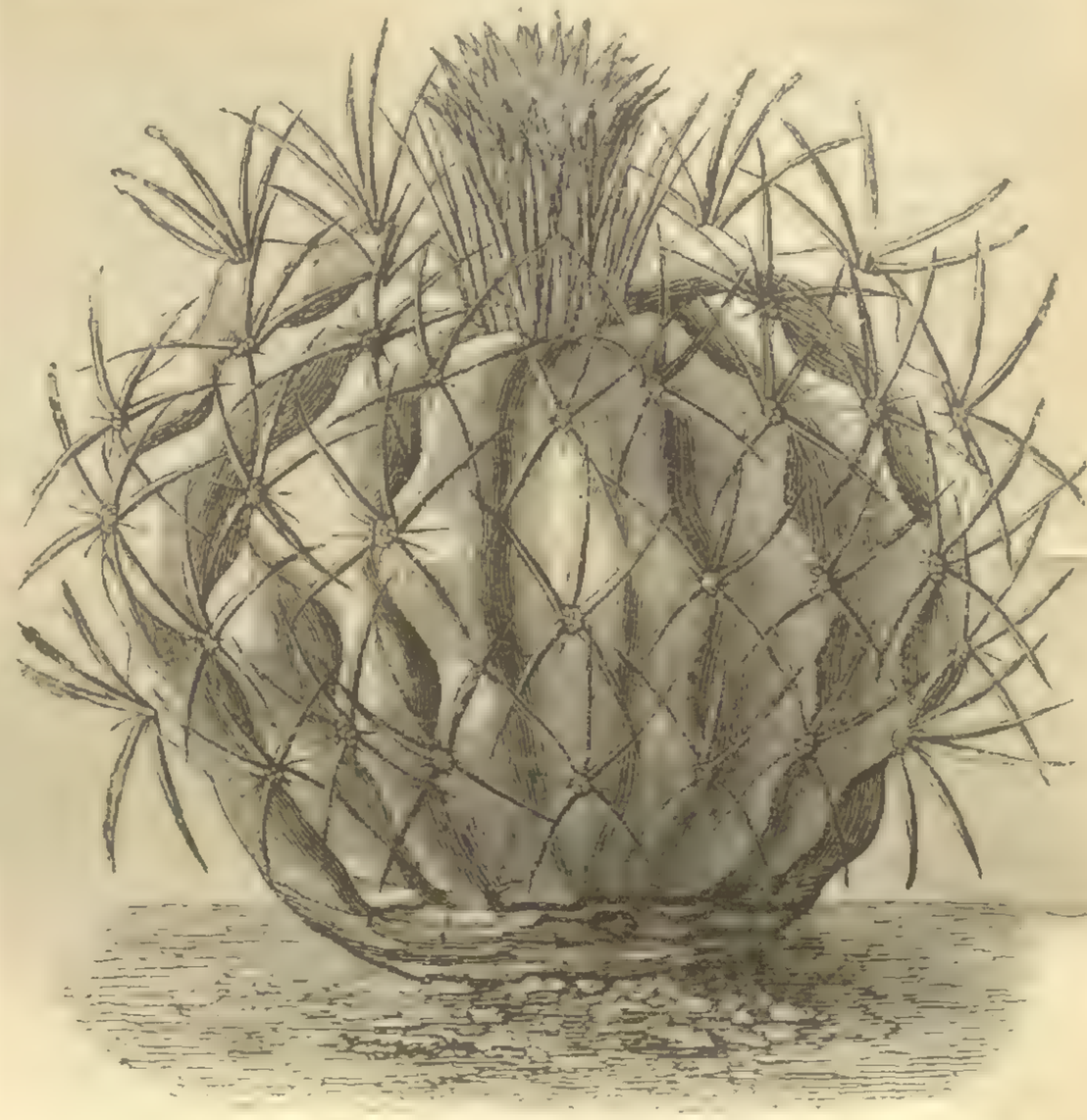

FIG. 692. ECHINOCACTUS OBVALLATUS.

E. obvallatus (fortified). *fl.* surrounded by numerous erect spines; petals purple, with a whitish border. Stem obovate, nearly globose, depressed at the summit, with about a score not very prominent vertical ribs. *h.* 4in. to 6in. South Mexico. See Fig. 692.

E. Ottonis (Otto's). *fl.* delicate lemon-colour, sessile, in threes or fours upon the summit of the stem, with bright red stigmas. July. Plant orbicular-cylindrical, contracted at the base, with about twelve vertical deep furrows; the ridges between the furrows obtuse, studded with rather closely-set small tufts of reddish wool; from these arise three or four rather strong spines, of a deep purplish-brown colour, which stand forward and are sometimes curved, and several lesser pale-coloured spreading ones. *h.* 3in. to 4in. Brazil, and probably also Mexico. (B. M. 3107.)

E. pectiniferus (pectinated).* *fl.* pale green, rose, solitary, two or more from the same crown, and springing from near the top; large for the size of the plant, very beautiful. April. Plant subrotund or ovate, rather suddenly contracted above the middle, depressed and even umbilicated at the top, deeply costate, with about twenty prominent costæ, which are obtuse and somewhat mammillose at the margins; in the centre of each mammilla is an oblong, white, woolly, close-placed areola, with numerous rather short spines, whose arrangement is very peculiar. They are of two kinds; the greater number spread out almost horizontally in two rows, closely placed in a pectinated manner, whitish or yellowish-white, tipped with red or brown, almost united at their base, the middle ones the longest; between these two rows are a few smaller ones. *h.* 4in. Mexico, 1844. A very showy species. (B. M. 4190.)

E. Pentlandi (Pentland's).* *fl.* large, in proportion to the size of the plant, springing from the sides upon the ribs, solitary, but three or four are expanded on one specimen at the same time; calyx tube green, becoming yellow above, and beset with small pilose and ciliated scales; limb of the calyx yellow-red; petals deep rose; stamens nearly white. July. Plant nearly globose, sessile, about 2in. across, depressed and umbilicate at the top, deeply marked with about twelve furrows and as many prominent obtuse ribs; glaucous-green. Ribs lobed or remotely crenate, distantly beset with little woolly tufts or areolæ (*pulvinuli*), from which rise about six slightly curved, spreading, rather stout spines, each ½in. long, or a little more. (B. M. 4124.)

E. Pfeifferi (Pfeiffer's). *fl.* yellow. Plant between cylindric and globular, about 1ft. high and 9in. in diameter; ridges 1½in. to 2in. deep, and 1½in. across at the base, triangular, deep green; spines in clusters 1in. apart, several, yellowish-white, rigid, about 1in. long. South Mexico.

E. rhodophthalmus (red-eyed).* *fl.* produced from the summit of the plant, large, handsome; calyx tube about 1in. long, ob-

Echinocactus—*continued.*

conical, quite destitute of spines or setæ; sepals or scales ovate, brown, with pale margins; petals bright rose, spreading, long, linear-spathulate, acute; stigma of nine or ten spreading bright yellow rays, covering the anthers. August. Plant sub-columnar, but tapering upwards almost from the base, deeply cut into about eight or nine furrows, the ridges obtuse, but formed into lobes or tubercles by transverse lines; areolæ furnished with obscure wool; spines about nine, strong, straight, tapering, flattened, at first deep purple, afterwards pale and almost colourless, mostly spreading, but the central one, which is much the longest and strongest, stands forward. *h.* 4in. to 5in. San Luis Potosi, Mexico, 1850. (B. M. 4486.)

FIG. 693. ECHINOCACTUS TEXENSIS.

E. Scopa (Broom). *fl.* yellow, with the petals, which are serrated at top, in two series. April. Plant oblong, many-ribbed; fascicles of spines approximate, woolly at base; outer spines white, twenty to forty, weak; central three or four, purple, stiff. *h.* 6in. Brazil, 1847. (B. R. xxv. 24.)

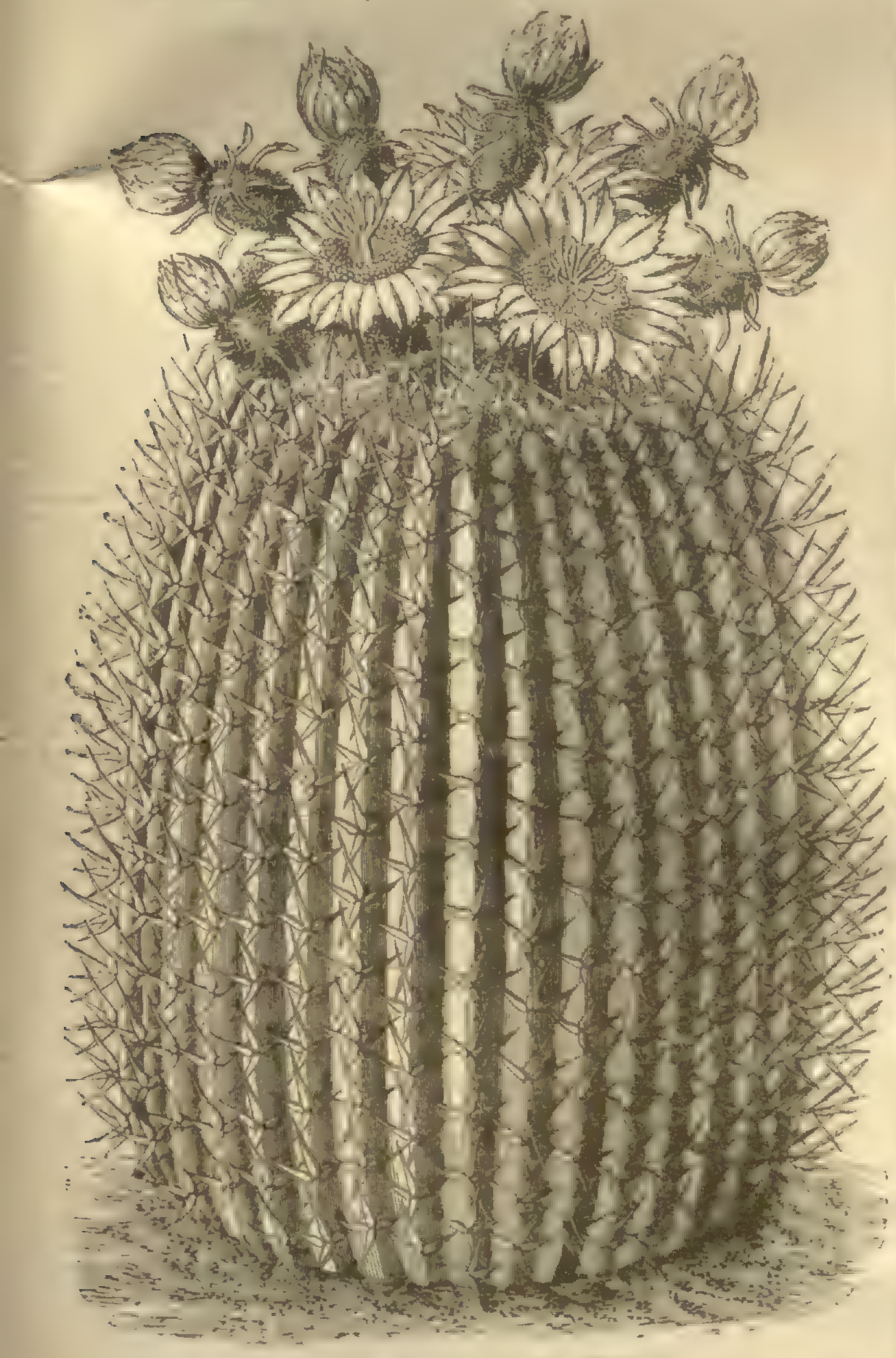

FIG. 694. ECHINOCACTUS VISNAGA.

Echinocactus—*continued.*

E. Simpsoni (Simpson's). *fl.* yellowish-green or purple, rather small, but numerous on the upper part of the stem. Plant dwarf, rarely exceeding 6in. to 8in. high, usually much less; tubercles loosely arranged, ½in. to ¾in. long, with several white spreading spines, and a central yellowish one. Colorado, 1876. Nearly or quite hardy. (Gn., April, 1877; G. C. n. s., vi. 293.)

E. texensis (Texan). *fl.* rose-coloured. Plants mostly depressed, sometimes globose; ribs from thirteen to twenty-four; areolæ ½in. long, and 1in. apart; spines from ½in. to 2in. long. North-eastern Mexico, &c. See Fig. 693, for which we are indebted to Herr Fr. Ad. Haage, jun.

E. tubiflorus (tube-flowered). *fl.* large, rising from one of the fascicles of spines; tube very long, a little enlarged upwards, brownish-green, scaly, each scale with a long tuft of slender, flaccid hairs; petals spreading, white, oblong, much acuminated. Plant sub-globose, much depressed, umbilicated at the top, and deeply cut into about eleven very prominent, compressed, slightly undulated angles, which have five or six woolly tubercles, each giving rise to a fascicle of six to eight strong black spines, from ½in. to ¾in. long. Mexico. (B. M. 3627.)

E. Visnaga (Visnaga, among the Mexican settlers, means a toothpick). *fl.* yellow, numerous. Plant large, elliptical, many-angled, with narrow sinuses and deep sinuated tubercled angles; top very woolly; areolæ approximate, rhomboid, immersed, glabrous, pale brown; prickles four, strong, central one 2in. long, the other three deflexed, shorter. *h.* 7ft. Mexico, 1847. A plant of this species, which measured 9½ft. in circumference, and weighed one ton, was an inmate of the succulent house at Kew, in 1846. From injury sustained during its conveyance to England, it did not long survive. See Fig. 694. (B. M. 4559.)

E. Williamsii (Williams's). *fl.* pale greenish-rose, small, nearly solitary. Spring. Plant tufted, depressed, glaucous, six to eight-ribbed; ribs broad, convex, tubercled, unarmed. *h.* 3in. Mexico 1845. (B. M. 4296.)

ECHINOCEREUS. *See* **Cereus.**

ECHINOCHLOA. *See* **Panicum.**

FIG. 695. ECHINOPS COMMUTATUS.

ECHINOPS (from *echinos*, hedgehog, and *ops*, appearance; in reference to the spiny scales of the involucre). Globe Thistle. SYN. *Echinanthus.* ORD. *Compositæ.* A rather large genus of ornamental, but somewhat coarse-growing, mostly hardy biennials or perennials, with a Thistle-like appearance. Inflorescence globose; florets white or blue, with an involucre of prickly scales and bristles. The cluster of heads or capitules is surrounded by an involucre of linear scales, thus completing the appearance of a single head. They are of very easy culture in common garden soil, and form excellent subjects for borders, or for naturalising in shrubberies. The biennials may be propagated by seed, sown in April; the perennials by division, in March.

E. banaticus (Banat). *fl.-heads* blue. Summer. *l.* roughish, pubescent above, downy beneath; radical ones pinnate; upper ones pinnatifid; lobes oblong, acuminated, spiny, slightly sinuated. *h.* 2ft. to 3ft. Eastern Europe, 1832. Slightly branching. Biennial.

E. commutatus (changed).* *fl.-heads* whitish. Summer. *l.* pinnatifid, rough with hairs on the upper side, downy beneath; margins with small spines. *h.* 5ft. to 7ft. Austria, &c., 1817. Perennial. SYN. *E. exaltatus.* See Fig. 695.

E. exaltatus (lofty). A synonym of *E. commutatus.*

E. Ritro (Ritro).* *fl.* blue. Summer. *l.* pinnatifid, not spinescent, downy beneath, webbed above. *h.* 3ft. South Europe, 1570. Perennial. (B. M. 932.)

E. R. ruthenicus (Russian). *fl.-heads* blue. Summer. *l.* alternate, leathery, pinnatifid; divisions toothed and spiny; dull green above, cottony beneath. Stem downy. *h.* 3ft. to 4ft. Eastern Europe and Western Asia, 1816. Perennial.

FIG. 696. FLOWERING BRANCH OF ECHINOPS SPHÆROCEPHALUS.

E. sphærocephalus (globe-headed). *fl.-heads* pale blue. Summer. *l.* sinuate-pinnatifid, spinose, green and hairy above, white or grey-felted beneath. Stems erect, striated, branched. *h.* 1ft. to 4ft. Europe, Western Asia. See Fig. 696.

ECHINOPSIS (from *echinos*, hedgehog, and *opsis*, like; referring to the spines which clothe its globose stem). ORD. *Cacteæ.* A small genus of stove Cacti, now generally placed as a section of *Cereus.* Calyx tube elongate, downy; lobes numerous; stamens in two series; the exterior adnate to the calyx tube; inner free. Fruit

Echinopsis—*continued.*

scaly. Stem depressed, ribbed, globose, or cylindrical. There are about two dozen species in cultivation, many very rare, and of which the following selection will be found a representative one. For culture, *see* **Cactus.**

E. campylacantha (curved-spined). *fl.* about 6in. long, from the areolæ near the centre of the plant; calyx tube funnel-shaped, olive-green; segments of the limb gradually passing into the spreading, acute, pale rose-coloured petals. Plant about 1ft. high, between ovate and globose; areolæ approximate, large, oval, woolly, bearing from eight to ten rather slender spines. Andes, 1851. A handsome and well-marked species. (B. M. 4567.)

E. cristata (crested).* This plant closely corresponds with the variety described below, but has a larger and different-coloured flower; the petals are broader in proportion to their length, a creamy-white gradually passing into the greenish-purple of the outer sepals; the spines in the present form are more slender, less curved, of a paler colour, but tipped with a darker brown. It flowers in July. Bolivia, 1846. (B. M. 4687.)

E. c. purpurea (purple). *fl.* very large, two to four from a plant, arising from near the summit and from one of the pulvilli, funnel-shaped; tube 6in. long, green, bearing numerous acuminated scales, fringed with rather copious woolly black hair; uppermost scales longer, gradually passing into sepals; petals rose-coloured, numerous, oblong, spreading, serrated and mucronate at point. July. Plant globose, but depressed and rather deeply umbilicated at top, full green (not glaucous), somewhat glossy, deeply furrowed. Ribs about seventeen or eighteen, nearly straight, much compressed, notched at nearly equal intervals, and thus divided into a number of very obtuse rounded lobes. Pulvinuli in the notches, from which also rise ten to twelve strong, large, slightly-curved unequal spines, the uppermost one the longest and strongest. *h.* 1ft. Bolivia, 1844. A very handsome species, remarkable for the large size of its flowers and for the deeply-lobed ribs of the stem. (B. M. 452.)

FIG. 697. ECHINOPSIS DECAISNEANUS.

E. Decaisneanus (Decaisne's). *fl.* white. Summer. Stem globular when young, sub-columnar when old, light glaucous green, with about fourteen compressed acute ribs; areolæ crowded, with white tomentum; spines short, greyish; interior ones very small. *h.* 6in. to 15in. Native country unknown. See Fig. 697.

E. Eyriesii (Eyries').* *fl.* large, in proportion to the size of the plant, deliciously fragrant, breaking forth from one of the angles, ascending; tube 9in. long, funnel-shaped, greyish-green, woolly, and marked with numerous tufts of oblong brown hairs; within green; petals numerous, lanceolate, very acuminate, white, patent, often reflexed; stamens numerous, rising a little above the tube of the flower, most numerous on one side; anthers yellow. January. Plant sub-globose, depressed, and even umbilicated at the top, about as large as a middling-sized orange, marked with several—twelve to fourteen—sharp and prominent angles, upon which are several white, rounded, woolly tubercles, mixed with several short, and not very conspicuous, spines. Mexico, 1835. (B. M. 3411, under name of *Echinocactus Eyriesii.*) + Bot. Reg

E. E. glaucus (glaucous). *fl.* sweet-scented. July. This plant is very similar to the type, from which it differs in having the angles much more acute and less wavy; the spines longer, more slender, and rather browner, and the tube of the flower is shorter, green, and free from the long, coarse, ash-coloured

Echinopsis—*continued.*

shagginess which distinguishes the original species. Native country unknown. (B. R. 1831, under name of *Echinocactus Eyriesii glaucus.*

E. formosa (beautiful). Stem sub-globular or elongated, pale green. Ribs obtuse, vertical, rounded, about sixteen in number; areolæ distant, oval, greyish, rather woolly; spines needle-like, rigid; two to four interior ones long, brown; eight to sixteen exterior fawn-coloured or whitish. *h.* 1ft. Mendoza.

FIG. 698. ECHINOPSIS PENTLANDI LONGISPINUS.

E. multiplex (multiplied).* *fl.* 6in. to 8in. long, and almost as much across when fully expanded; tube long, clavate, thickly clothed at the base with short tufts of dense white hairs, while the rest of the tube is beset with longer and dark-coloured ones; petals numerous; outer ones narrow-lanceolate, gradually

FIG. 699. ECHINOPSIS PENTLANDI SCHEERII.

Echinopsis—*continued.*

becoming shorter and broader, so that the innermost ones are almost ovate and acuminate, all of a delicate rose-colour, deeper towards the apex; anthers yellow, rounded. Plant marked with about thirteen deep furrows and as many ridges, which are prominent, acute, somewhat sinuated at the keel, and there beset with thickly downy oval areolæ; spines ten to twelve, the central one longer and stronger than the rest, especially in the upper areolæ, where they are represented of a uniform deep tawny colour, while those on the sides are more regular in size, and variegated with dark brown and white. *h.* 6in. South Brazil (according to Pfeiffer). A very desirable plant, on account of the delicacy and richness of colour of the petals. SYN. *Cereus multiplex.* (B. M. 3789.)

E. oxygonus (sharp-angled). *fl.* proceeding from the furrows about the foot of the stem, nearly 1ft. long, reversed cone-shaped; tube somewhat curved, externally covered with bracts; the lower are small red, increasing in size, and at last terminating in the petals, which are broad, lance-shaped, and of a rose-colour. Plant nearly of a globular form, of a bluish-green colour. Ribs fourteen, rising from a broad base, and running into an acute edge; the furrows are somewhat sharp spines, about fourteen, of various sizes, the outer generally larger, the inner smaller, all of a brown colour, cone-like, not flat, the younger surrounded by a tomentum which is more or less wanting in the older. Brazil. (B. R. 1711, under name of *Echinocactus oxygonus.*)

E. Pentlandi (Pentland's). *fl.* bright rose-carmine. Summer. Plant globular or sub-globular, with twelve or thirteen (rarely with a larger number) acute, spiral, notched ribs, rather glaucous-green; areolæ more or less crowded, woolly, furnished with generally nearly equal spines. Peru, 1843.

E. P. longispinus (long-spined). *fl.* crimson. Stem sub-globular; spines very long, dark brown. See Fig. 698.

E. P. Scheerii (Scheer's). *fl.*, petals yellow below, bright rose above. Stem nearly globular; spines long. See Fig. 699.

ECHINOSPERMUM (from *echinos*, a hedgehog, and *sperma*, a seed; referring to the prickly bur). SYNS. *Lappula* and *Rochelia.* ORD. *Boragineæ.* A genus containing about fifty species of annual, biennial, or perennial, hispid or pubescent herbs, very few of which are in cultivation. Flowers blue or whitish, usually small, racemose or spicate. Leaves alternate, often narrow. The species are most abundant in the temperate regions of the Northern hemisphere. For culture, *see* **Myosotis.**

E. diffusum (diffuse). *fl.*, corolla bright blue; racemes commonly loose and spreading. *fr.* a globose bur. *l.* oblong-lanceolate, or the lowest spathulate, narrowed at base into long wing-margined petioles; the upper sessile, from oblong-lanceolate to ovate or cordate, passing into small bracts. *h.* 1ft. California. Perennial. SYN. *E. nervosum.*

E. Lappula (Little Bur). This species has all the appearance and the small flowers of a Myosotis, but with very rough triangular nuts. South Europe. Annual. It has been occasionally found in isolated localities in England, where it, no doubt, was accidentally introduced.

E. marginatum macranthum (large-flowered, margined).* *fl.* pale blue, Myosotis-like; racemes many-flowered. *l.* lanceolate, rough. Stems erect. Russia. Biennial. (R. G. 1119.)

E. nervosum (nerved). A synonym of *E. diffusum.*

E. virginicum (Virginian). *fl.*, corolla slightly surpassing the calyx, pale blue or white. *fr.* globular, armed all over with short prickles. *l.*, radical ones round, ovate or cordate, slender, petioled; cauline ones ovate-oblong to oblong-lanceolate, acuminate at both ends; uppermost passing into lanceolate bracts. Stem 2ft. to 4ft. high, erect, with long and widely spreading branches. Canada to Louisiana. Annual. SYN. *Myosotis virginica.*

ECHINOSTACHYS. A synonym of **Pycnostachys** (which *see*).

ECHIOGLOSSUM STRIATUM. *See* **Cleisostoma striatum.**

ECHITES (from *echis*, a viper; referring probably either to its deleterious quality or its twining habit). ORD. *Apocynaceæ.* A genus of about thirty-five species of handsome stove evergreen twining shrubs, all natives of tropical America. Flowers sub-corymbose; corolla salver-shaped, having a naked throat and tube, with unequal segments; peduncles interpetiolar, many-flowered. Leaves opposite; interpetiolar cilia glandular. For culture, *see* **Dipladenia.**

E. atropurpurea (dark-purple).* *fl.* dark chocolate-colour. July. Brazil, 1814. (B. R. 1843, 27.)

Echites—*continued.*

E. franciscea (River Francisco). *fl.* purplish-red, large; peduncles short, producing from six to eight-flowered umbels. September. *l.* dark green. Brazil, 1845. (B. R. 1847, 24.)

E. f. sulphurea (sulphur).* *fl.* sulphur-coloured, with a red tube and a rose-coloured eye; smaller than in the type. Brazil. A pretty, distinct variety. It is a free-growing stove creeper, and may be cultivated either in a pot, and supported by neat rods or a wire trellis; or planted out in a border, against a back wall or pillar. (B. M. 4547.)

FIG. 700. ECHITES NUTANS.

E. nutans (nodding).* *fl.* yellow, nodding, in panicles, peduncular; corolla lobes blunt, wavy. September. *l.* ovate, acuminate, pale pea-green, the midrib and nerves veined with beautiful transparent red, downy beneath. West Indies, 1823. See Fig. 700. (B. M. 2473.)

E. rubro-venosa (red-veined). *l.* covered with a brilliant network, which is speckled with bright red or a golden-yellow, and stands out conspicuously from the emerald-green ground. South America, 1867. A very handsome plant. (F. d. S. 1728.)

E. scholaris. *See* **Alstonia scholaris.**

E. splendens (splendid). A synonym of *Dipladenia splendens.*

E. stellaris (starry).* *fl.* rose, yellow; racemes axillary, a little hispid, ten to twelve-flowered; peduncles downy. September. *l.* ovate-oblong, glabrous above, downy beneath. Branches downy. *h.* 6ft. Brazil, 1831. (B. R. 1664.)

E. umbellata (umbellate). *fl.*, corolla silky, villous inside the tube, large, with a white or pale yellow limb and green tube; umbels few-flowered. July. *l.* ovate-orbicular, cuspidately mucronate, 2½in. long. West Indies, &c., 1733.

ECHIUM (from *Echion*, the old Greek name given to this plant by Dioscorides). Viper's Bugloss. ORD. *Boragineæ.* A genus of about twenty species (chiefly South European and Oriental) of very handsome rough, shrubby or herbaceous, hardy or greenhouse plants. Flowers in spiked or panicled racemes, recurved at top. Leaves alternate. All the species of this large genus are of very easy culture in good ordinary garden soil. Cuttings of the shrubby sorts will root in sandy soil, under a hand glass, but they are more readily increased by layers. The herbaceous species are easily raised from seeds. The following are nearly all those which are in cultivation. About fifty forms have been described as species; a careful study of the genus would probably reduce the number to about half.

E. albicans (whitish). *fl.*, corolla at first rosy colour, ultimately becoming violet, nearly 1in. in length; racemes branching, recurved at the ends. *l.* forming a dense tuft, linear-lanceolate, tapering at the base. *h.* 6in. to 18in. Spain. Plant clothed with hoary, appressed, bristly hairs. Hardy perennial. (G. C. n. s., xv. 301.)

Echium—*continued.*

E. candicans (whitish).* *fl.*, corolla blue, pilose at top outside; panicles terminal, conical; spikelets pedunculate, simple. May. *l.* lanceolate, clothed with silky, silvery, canescent down. Stem branched. *h.* 2ft. to 4ft. Madeira, 1777. Greenhouse biennial.

E. creticum (Cretan). *fl.*, corolla reddish-violet, irregular; spikelets simple, axillary, and terminal, many-flowered. July. *l.* oblong-lanceolate, hispid. Stem herbaceous, diffuse, very hispid, branched at the base. *h.* 6in. to 18in. South Europe, 1683. Hardy annual. (B. M. 1934.)

E. fastuosum (proud).* *fl.*, corolla deep blue, campanulate; panicle thyrsoid, ovate, large, dense; spikelets pedunculate, simple. April to August. *l.* oblong-lanceolate, acuminated, veiny, beset with soft white hairs, ciliated. Stem branched, rather villous above. *h.* 2ft. to 4ft. Canary Islands, 1779. Greenhouse evergreen. (R. H. 1876, 10.)

E. vulgare (common). *fl.*, corolla fine purple in bud, afterwards violet-blue, downy outside; racemes terminal, spike-formed, long; spikelets spreading, simple. Stem usually simple, tubercled. *h.* 2ft. to 4ft. Europe (Britain). Biennial. (Sy. En. B. 1095.)

ECLOPES. Included under **Relhania** (which *see*).

EDELWEISS. *See* **Leontopodium alpinum.**

EDENTATE. Without teeth.

EDGEWORTHIA (named in honour of M. P. Edgeworth, of the East India Co.'s service, and a botanist). ORD. *Thymelaceæ.* Ornamental greenhouse evergreen shrubs, closely allied to *Daphne.* The only other species besides that here described is a native of East Indies. They grow best in a compost of two parts sandy loam and one part turfy peat. Good drainage, and a liberal supply of water in summer, are essential in the culture of these plants. Increased by cuttings, inserted in sandy soil, under a bell glass, in spring.

E. chrysantha (golden). *fl.* yellow, capitate; tube of corolla clavate, clothed with silky hairs. February. *l.* oblong-lanceolate, stalked, dull green, pilose on the ribs beneath. *h.* 1ft. China and Japan, 1845. (B. R. 1847, 48.)

EDGING. This term is applied to dwarf plants, turf, or material of any description, used in gardens for dividing beds, borders, &c., from the walks. It also refers to an outside line of short plants in an arrangement with others of a taller-growing character. Turf verges are only to be recommended for flower gardens or pleasure grounds, where they should be wide enough to admit of mowing with the machine each time the lawns are cut. In a kitchen garden, they would necessitate too much work in keeping in order, as, besides mowing the verge, the Edge on each side of it would require to be frequently clipped. Box Edging is largely used for walks, and looks well if the whole length grows evenly. It has, however, the disadvantage of harbouring slugs, &c., and also of being liable to destruction in patches by severe frosts. Thick corrugated tiles, placed lengthways in a vertical position, or common bricks, used similarly, but set on an angle towards the walk, form a clean and permanent Edging, when properly laid, for kitchen gardens. These latter are also uninjured by salt or acids, used in many places for killing weeds in the gravel. In preparing the ground for an Edging of any description for walks, it should first be firmly and evenly trod its full length, and also well raked. The proper levels should be marked by short pegs, driven in the ground about 10ft. apart. If such pegs are placed straight, and a line tightly strained to touch their tops, the necessity of removing or adding soil in any part of it may be at once seen. It is impossible to cut out, plant, or fix an Edging properly if the ground is not previously carefully prepared.

EDGING-IRON. A crescent-shaped tool, made of steel, with a socket for the insertion of a straight wooden handle. It is most useful for cutting turf verges by the sides of walks, flower-beds, &c., as, being well under the guidance of the hand, it may be employed with equal facility either in a curved or straight line.

EDRAIANTHUS. *See* **Wahlenbergia.**

EDWARDSIA. *See* **Sophora.**

EFFUSE. Generally applied to an inflorescence. A very loosely-arranged panicle is said to be Effuse.

EGENOLFIA. *See* **Acrostichum.**

EGG-BEARING GOURD. *See* **Cucurbita Pepo ovifera** and **Vegetable Marrow.**

EGG PLANT. *See* **Aubergine.**

EGLANTINE. "A name that has been the subject of much discussion, both as to its exact meaning, and as to the shrub to which it belongs." The Eglantine of Gerard, Parkinson, and some of the other old writers, is, no doubt, *Rosa rubiginosa*, our common Sweetbriar. The "twisted Eglantine" of Milton is "supposed to have meant the Woodbine (*Lonicera Periclymenum*), which is still known as Eglantine in North-east Yorkshire" (Prior).

EGYPTIAN BEAN OF PYTHAGORAS. *See* **Nelumbium speciosum.**

EGYPTIAN LOTUS. *See* **Nymphæa Lotus.**

EHRETIA (named after G. D. Ehret, an artist and botanist, born in Germany 1708, died in England 1770). TRIBE *Ehretieæ* of ORD. *Borragineæ*. Handsome stove or greenhouse evergreen trees or shrubs. Flowers usually white, small, in corymbose cymes or terminal panicles; calyx small, deeply five-parted; corolla salver-shaped, with a five-parted limb. Leaves petiolate, alternate, opposite, or three in a whorl, entire or serrated. They thrive in a compost of loam and peat. Cuttings will root in sandy soil, in spring, if placed under a bell glass, in bottom heat.

E. serrata (serrate). *fl.* white, small, numerous, collected into small, nearly sessile fascicles, having a powerful honey-like perfume. *l.* alternate, broad-lanceolate, serrated, five-pointed. *h.* 6ft. East Indies, 1823. Stove. (B. R. 1097.)

E. tinifolia (Tinus-leaved). *fl.* white, small, numerous, strong-scented; panicles terminal, oblong. June, July. *l.* oblong-ovate, or ovate, quite entire, about 4in. long. *h.* 16ft. to 28ft. West Indies, &c., 1734. Greenhouse.

EHRETIEÆ. A tribe of the order *Borragineæ*.

EICHHORNIA (named in honour of J. A. F. Eichhorn, an eminent Prussian). ORD. *Pontederiaceæ*. Interesting and beautiful stove aquatics, natives of South America and tropical Africa. They may be placed in large pots, filled with rather coarse rich soil, which should afterwards be immersed and kept in a tank of water heated to about 80deg. *E. crassipes* floats on the surface of such water, and grows freely, without the roots being in soil. Propagated by division of the rhizomes, in spring.

E. azurea (blue).* *fl.* scattered or crowded in pairs along a stout, hairy, sessile rachis; perianth bright pale blue, funnel-shaped, hairy externally. July. *l.* on long or short petioles, which are not inflated; very variable in size and shape, 3in. to 8in. in diameter, from rounded-cordate to trapeziform or rhomboid, or very broadly oblate and obcordate, rounded-retuse or sub-acute at the tip. Stem as thick as the thumb, floating and rooting, green, smooth, flexuous. Brazil, 1879. (B. M. 6487.)

E. crassipes (thick-stalked).* *fl.* funnel-shaped, about 1½in. long, of six ovate-oblong violet segments; racemes many-flowered; flower-stalks thick; spathe terminal, recurved. Summer. *l.* large, fleshy, orbicular, acute-stalked; stalk much thickened at the base. Rhizome thick. 1879. (B. M. 2932, under name of *Pontederia azurea*.)

E. paniculata (paniculate). *fl.* in a compound spike of from ten to twelve; perianth petaloid, two-lipped; lower lip of three purple segments; upper and smaller of three blue ones, with a two-lobed white spot in the centre, yellowish in the disk. Summer. *l.*, radical ones on long petioles, all cordate and acuminate, entire, striated; the sinus at the base deep and narrow. Stems often several from the same root, 1ft. to 1½ft. high in the strongest specimens, erect, terete, soft and herbaceous, sheathed below with the membranaceous and stipulate bases of the radical leaves, and a few long leafless scales. South America. (B. M. 5020, under name of *E. tricolor*.)

EKEBERGIA (named in honour of Charles Gustavus Ekeberg, captain of a Swedish East Indiaman, who took Sparrmann to China for the purpose of making inquiries in natural history). ORD. *Meliaceæ*. A genus of about three species of fine greenhouse evergreen trees, from tropical and Southern Africa. For culture, *see* **Melia.**

Ekebergia—*continued.*

E. capensis (Cape). *fl.* white. July. *l.* impari-pinnate, with four or five pairs of elliptical, acuminate, smooth leaflets. Cape of Good Hope, 1789. A large tree.

ELÆAGNACEÆ. A small order of trees or shrubs, more or less covered with minute silvery or brown scurfy scales. Flowers white or yellow, regular, one or two-sexual, axillary, fascicled or cymose. Leaves alternate or opposite, exstipulate, entire. The order is represented in Britain by *Hippophäe rhamnoides*, the Sea Buckthorn, a spiny shrub, thriving well near the sea. There are three genera, *Elæagnus*, *Hippophäe* and *Shepherdia*, and about twenty species.

ELÆAGNUS (from *Elaios*, the Olive; and *Agnos*, the *Vitex Agnus-castus*; the *Elæagnos* of Theophrastus is the Willow). Oleaster, or Wild Olive. ORD. *Elæagnaceæ*. Very ornamental, deciduous or evergreen shrubs or small trees. Flowers axillary, clustered or solitary; perianth campanulate or salver-shaped. Leaves simple, alternate. They grow freely in any ordinary soil that is tolerably dry, and may be readily increased by seeds, layers or cuttings.

E. argentea (silvery). *fl.* yellow, aggregate, nodding, axillary. July, August. *fr.* roundish-ovate, covered with silvery scales, ribbed. *l.* waved, oval-oblong, rather acute, glabrous on both surfaces, and covered with silvery scales. *h.* 8ft. to 12ft. North America, 1813. (W. D. B. ii. 161.)

E. crispa (curled). A synonym of *E. longipes*.

E. glabra (glabrous). *fl.* whitish, sub-solitary in the axils of the leaves. Autumn. *l.* ovate-oblong, acuminate, evergreen; adult ones green above, clothed below with rusty-coloured scales. *h.* 3ft. to 6ft. Japan. There are very pretty variegated forms of this species.

FIG. 701. FLOWERING BRANCH OF ELÆAGNUS HORTENSIS ANGUSTIFOLIA.

Elæagnus—*continued.*

E. hortensis (garden).* *fl.* yellow within, scaly without, solitary, or three or four together, fragrant. May. *l.* lanceolate, hoary all over with stellate hairs, 2in. to 3in. long. Branches brown and smooth, more or less spiny. *h.* 15ft. to 20ft. Orient, naturalised in South Europe, 1633. A handsome deciduous tree. (S. F. G. 152.)

E. h. angustifolia (narrow-leaved) only differs from the type in its narrower leaves. See Fig. 701. (B. R. 1156.)

E. longipes (long-stalked).* *fr.* orange, studded with small ferruginous scales, long-stalked, transparent, and produced in clusters. *l.* green above, silvery-white beneath. *h.* 3ft. Japan, 1873. A very desirable spreading evergreen shrub, with deep reddish-brown twigs. SYN. *E. crispa.* (G. C. 1873, 1014.)

E. macrophylla (large-leaved).* *fl.* greenish-yellow, clustered. Autumn. *l.* roundish-ovate, large, smooth, green above, covered below with bright silvery scales. *h.* 6ft. Japan. An unarmed bush.

E. pungens (stinging).* *fl.* yellowish, one or two together. *l.* oblong, entire, undulate, smooth, green above, silvery beneath. *h.* 6ft. Japan. A spiny shrub. There are very handsome variegated forms of this species.

ELAËIS (from *Elaia*, the Olive; oil expressed from the fruit as from olives). Oil Palm. ORD. *Palmeæ.* A very small genus of stove palms. Fruit bright red, in large, somewhat obovate heads. Leaves pinnatisect, with strong prickly stalks. They form excellent decorative plants when in a young state, and thrive well in a rich sandy soil. Increased by seeds.

E. guineensis (Guinea). Stem erect, 20ft. to 30ft. high, terminated by a fine crown of pinnate dark green leaves, of about 15ft. in length. Guinea, 1730. This species yields the celebrated palm oil of commerce. (G. C. n. s., vii. 373.)

E. melanococa (black-seeded). This closely resembles the foregoing, but is smaller, with a somewhat decumbent habit, emitting roots from lower side of prostrate stem. Tropical America, 1821.

ELÆOCARPUS (from *Elaia*, an Olive, and *karpos*, a fruit; fruit round, containing a nut furnished with rugosities). Including *Monocera.* ORD. *Tiliaceæ.* Very handsome stove or greenhouse evergreen trees or shrubs. Flowers small, in racemes, usually fragrant; petals five, either toothed or beautifully fringed. Leaves alternate, or rarely opposite, entire or serrate. They thrive well in a mixture of loam and peat. Increased by cuttings, made of the ripened shoots, with leaves intact, and placed in a sandy soil, in bottom heat; or by seeds, sown in a hotbed.

E. cyaneus (blue). *fl.* white; racemes axillary, close-flowered. July. Drupe somewhat globose, blue. *l.* oblong-lanceolate, serrated, netted with veins. *h.* 15ft. Australia, 1803. Greenhouse. (B. M. 1737.)

E. grandiflora (large-flowered).* *fl.*, racemes few, two, four, or five-flowered, generally one or two among the terminal clusters of leaves, drooping; calyx of five narrow, almost linear-lanceolate sepals, quite red externally, white within; petals five, spreading, white or pale yellow, cuneate, more or less silky, especially externally; the apex laciniated; pedicels red, much longer than the petioles. Summer. *l.* from 3in. to nearly 6in. long, including the petiole, broad-lanceolate, tapering into a footstalk, a good deal clustered at the apices of the branches; apex generally obtuse; margin entire, or usually more or less crenato-serrated or sinuated. *h.* 7ft. Java, 1852. An extremely handsome stove plant. SYN. *Monocera grandiflora.* (B. M. 4680.)

E. serratus (serrate). *fl.* white, but purplish before opening, sweet-scented; racemes axillary or lateral, drooping. March to October. Drupe globose. *l.* with glands in the axils of the veins beneath, elliptic-oblong, serrated, acuminated. *h.* 50ft. East Indies, 1774. Stove.

ELÆODENDRON (from *Elaia*, an Olive, and *dendron*, a tree; the fruit is like that of an Olive, and the seeds are oily). Olive-wood. ORD. *Celastrineæ.* This genus, which embraces about thirty species of ornamental stove or greenhouse trees or shrubs, is represented in all tropical countries; the majority, however, grow in Africa and India. Flowers small, in axillary fascicles. Leaves small. Laurel-like, opposite. For culture, *see* **Elæocarpus.**

E. capense (Cape).* *fl.* green, inconspicuous; corymbs axillary, dichotomous, a single flower standing in the fork, and the branches supporting three flowers each; bracts lanceolate, opposite, resembling much diminished leaves. *fr.* yellow, oval, about the size of a Hazel-nut, fleshy, and containing a hard nut with one to three cells. *l.* petiolate, sub-opposite, lanceolate-elliptical, the

Elæodendron—*continued.*

sides somewhat unequal, coriaceous, distantly spinuloso-serrulate, slightly revolute in the edges, dark green above, paler below, and often becoming rusty. Branches spreading, pendulous. *h.* 18ft. Cape of Good Hope, 1828. A handsome greenhouse decorative plant, when laden with its showy yellow fruits. (B. M. 3035.)

E. glaucum (milky-green). *fl.* greenish-yellow, small; panicles axillary; cymes loose, nearly the length of the leaves. *l.* acute, or acuminate, crenate or nearly entire, membranous or subcoriaceous. *h.* 6ft. India, &c., 1824. Stove evergreen.

E. xylocarpum (woody-fruited). *fl.* greenish-yellow; cymes dichotomous, one-half shorter than the leaves. *l.* obovate-oblong, entire or somewhat scalloped, glaucous, on very short petioles. *h.* 4ft. Island of St. Thomas, 1816. Stove evergreen.

ELAPHOGLOSSUM. Includer under *Acrostichum.*

ELATA. A synonym of **Phœnix.**

ELDER. The popular name of **Sambucus.**

ELECAMPANE. *See* **Inula Helenium.**

ELECTRA. A synonym of **Schismus.**

ELEMI. The name of certain stimulant gum resins, derived from various plants.

ELEPHANT APPLE. *See* **Feronia Elephantum.**

ELEPHANT'S FOOT. *See* **Testudinaria elephantipes.**

ELEPHANTUSIA. A synonym of **Phytelephas.**

ELETTARIA (Elettari is the native name of the plant in Malabar). ORD. *Scitamineæ.* A genus of stove plants, having much the appearance of *Amomum*, natives of the tropical parts of India. There are only two species, and, according to some authorities, these are but varieties of one. *E. Cardamomum* yields the Cardamoms of commerce. For culture, *see* **Maranta.**

E. Cardamomum (Cardamom). *fl.* pale greenish-white, alternate, short-stalked, in short racemes from the axils of the large bracts of the long-jointed flexuous flower-stems; calyx tubular, three-toothed, finely striated; corolla tube as long as the calyx; limb double, exterior portion of three oblong, concave, nearly equal divisions; inner lip obovate, longer than the exterior division, curled at the margins; apex three-lobed, marked in the centre with purple-violet stripes. *l.* lanceolate, acuminate, subsessile, entire, 1ft. to 2ft. long. Stem erect, jointed, enveloped in the sheaths of the leaves. *h.* 6ft. to 9ft. Hilly parts of Travancore and Malabar. (B. M. Pl. 267.)

ELEUSINE (mythological; from *Eleusis*, where was a celebrated temple of Ceres [Demeter]). ORD. *Gramineæ.* A genus of chiefly uninteresting grasses, all natives of the warmer parts of the globe. The culture is very simple, in the open air during summer, in a light soil. Propagated by seeds. *E. barcinonensis* has a fascicled spicate inflorescence, and *E. oligostachya* is pretty for winter bouquets.

ELICHRYSUM. *See* **Helichrysum.**

ELISENA (named in honour of Princess Elise, sister of Napoleon). ORD. *Amaryllideæ.* A small genus (three species are described, and these only appear to differ slightly from each other) of ornamental greenhouse bulbous plants. For culture, *see* **Hymenocallis.**

E. longipetala (long-petalled).* *fl.* white; divisions of the limb rotate, linear, 3in. long, the edge undulated, the point recurved; corona 1½in. deep; scape two-edged, about six-flowered. March. *h.* 3ft. Lima, 1837. (B. M. 3873.)

ELLEANTHUS (from *eilo*, I shut in, and *anthos*, a flower; in reference to the flower being closed by bracts). SYN. *Evelyna.* ORD. *Orchideæ.* A genus of pretty stove terrestrial orchids. About fifty species have been described, but few have been in cultivation. All are natives of tropical America. They are of easy culture in an ordinary orchid house, requiring a compost of loam and peat.

E. Caravata (Caravata). *fl.* bright yellow, with a short, purplish, inferior, twisted ovary; spike elongato-capitate, very compact, formed of numerous erecto-patent, purple, lanceolate-acuminate, imbricated, striated bracts, longer than the flowers; calyx of three ovato-lanceolate, suddenly acute, nearly erect sepals; petals shorter than the lip, as are the oblong, obtuse, nearly erect petals; lip large, erect, three-lobed. November. *l.* distant, on long, sheathing bases, lanceolate, rigid, very long, and gradually and finely acuminate. Stem about 1ft. high, erect, slender,

Elleanthus—*continued.*

terete, hispid, as is all the foliage, and, more or less, the bracts and sepals. Guiana, 1858. SYN. *Evelyna Caravata* (under which name it is figured in B. M. 5141).

E. kermesina (carmine). *fl.* bright carmine. January. *h.* 6in. Mariquita, 1843.

E. xanthocomus (yellow-haired). *fl.* yellow, in erect racemes. May. *l.* lanceolate, acuminate, vaginate. *h.* 1ft. Peru, 1872. Erect. (B. M. 6016.)

ELLIOTTIA (named in honour of Stephen Elliot, an American botanist, who died in 1830). SYN. *Tripetaleia.* ORD. *Ericaceæ.* A genus of three species of very pretty half-hardy evergreen shrubs, two of which are Japanese (these are probably not at present in cultivation), and the third North American. The one mentioned below does well in a warm situation, in a peaty soil. Propagated by cuttings.

E. racemosa (racemose). *fl.* white, in conspicuous terminal racemes or panicles, resembling those of *Andromeda.* August. *l.* alternate, entire. *h.* 4ft. to 10ft. Georgia.

FIG. 702. ELLIPTIC AND EMARGINATE LEAF.

ELLIPTIC. Formed like an ellipse; an oval figure. Fig. 702 shows an Elliptic and Emarginate Leaf.

ELLOBOCARPUS OLERACEUS. A synonym of **Ceratopteris thalictroides.**

ELM. *See* **Ulmus.**

ELODEA (from *elodes*, growing in watery places). Water Thyme. ORD. *Hydrocharideæ.* A genus of unattractive slender aquatic perennials. There are eight species, none of which are worth growing. *E. canadensis* merits mention in this work from the fact that its extremely rapid increase often entails no little work on the gardener. It was introduced from America to County Down about 1836, and into England in 1841. Very soon, it filled a number of canals and rivers with its dense, matted growths to such an extent as seriously to impede navigation. No inconvenience of this kind is complained of in its native country. In many places now (fish ponds, ornamental waters, &c.), where at one time it was so abundant, it seems to have almost disappeared, perhaps owing to the exhaustion in the soil of the specific nutriment on which the plant feeds.

ELONGATED. Lengthened out.

ELYMUS (from *elumos*, the old Greek name for a similar grass, used by Hippocrates). Bunch Grass. ORD. *Gramineæ.* A genus of about twenty species of tall perennial grasses, represented in Britain by the Lyme Grass, *E. arenarius*, a sea-side plant, useful for fixing, by means of its long creeping rhizomes, the moving sand. All are natives of North temperate regions. *E. condensatus* is described as a vigorous perennial grass, from British Columbia, forming a dense, compact, column-like growth, more than 8ft. in height, covered from the base almost to the top with long arching leaves, and crowned in the flowering season with numerous erect, rigid spikes, each 6½in. long, and resembling an elongated ear of Wheat in form.

EMARGINATE. Having a small notch at the end or tip, as if a piece had been taken out. See Fig. 702.

EMBELIA (Ceylonese name of one of the species). ORD. *Myrsineæ.* A genus of mostly stove climbing shrubs, or small trees. Flowers white or greenish-yellow, small, polygamous, mostly dicœcious. Fruit small, globose, one (rarely two) seeded. Leaves entire or toothed; petioles often margined or glandular. Embelias thrive in a compost of peat and loam. Propagated by cuttings, made of half-ripened shoots, and placed in sandy soil, under a bell glass, in heat. There are about sixty

Embelia—*continued.*

species; but *E. robusta* is probably the only one in cultivation.

E. robusta (robust). *l.* obovate-oblong, elliptic, or obovate, shortly acuminate, undulate or obscurely serrulate, rusty-pubescent, or rarely glabrous beneath, reticulated. Branches glabrous. *h.* 20ft. India. A large rambling shrub.

EMBOSSED. Projecting in the centre, like the boss, or umbo, of a round shield or target.

EMBOTHRIUM (from *en*, in, and *bothrion*, a little pit; referring to the pollen-cases, or anthers). ORD. *Proteaceæ.* A genus of four species of very ornamental evergreen shrubs. All are natives of the Andes, or extra-tropical South America. They require protection throughout the winter, in cold, northerly situations. In the southern counties of England, the one here described is quite hardy. It thrives best in a compost of sandy peat; and may be readily increased by cuttings, inserted in peaty soil, under a hand glass.

E. coccineum (scarlet).* *fl.* orange-scarlet, long, pendent; perianth tubular, with a sub-globose four-cleft limb, bearing the sessile anthers on the concave lobes. Summer. *l.* simple, entire, oblong. *h.* 3ft. 1851. (B. M. 4856.)

EMBRACING. A leaf is said to Embrace a stem when it clasps it round with its base.

EMBRYO. The rudimentary plant within the seed.

EMERGENT. Protruded through the cortical layer.

EMMENANTHE (from *emmenos*, enduring, and *anthos*, a flower; in reference to the persistent corolla). SYN. *Miltitzia.* ORD. *Hydrophyllaceæ.* A genus of dwarf annual herbs, containing five species, natives of North-west America. Flowers yellow; corolla campanulate, marcescent, persistent. Leaves alternate. None of the species are yet in general cultivation.

EMPETRACEÆ. A natural order of Heath-like evergreen shrubs. Flowers small, solitary or clustered, axillary or terminal, regular, polygamous, bracteolate or not. Fruit fleshy. Leaves alternate, exstipulate. The distribution of the order is North temperate and Arctic zones, Chili, and Fuegia. There are only four species. The order is represented in Britain by *Empetrum nigrum*, the fruit of which is eaten in some countries. The three genera are: *Ceratiola*, *Corema*, and *Empetrum.*

EMPETRUM (*Empetron*, the Greek name of a plant used by Dioscorides, from *en*, upon, and *petros*, a rock; in allusion to the place of growth). Crakeberry, or Crowberry. ORD. *Empetraceæ.* An ornamental hardy evergreen, low, spreading, Heath-like shrub. Flowers minute, axillary, dicœcious. Fruit a small berry-like drupe. Leaves small, crowded, entire, evergreen. They are well adapted for growing in damp, peaty situations. Propagated readily, in summer, by cuttings, which should be placed in sandy soil, under a handlight.

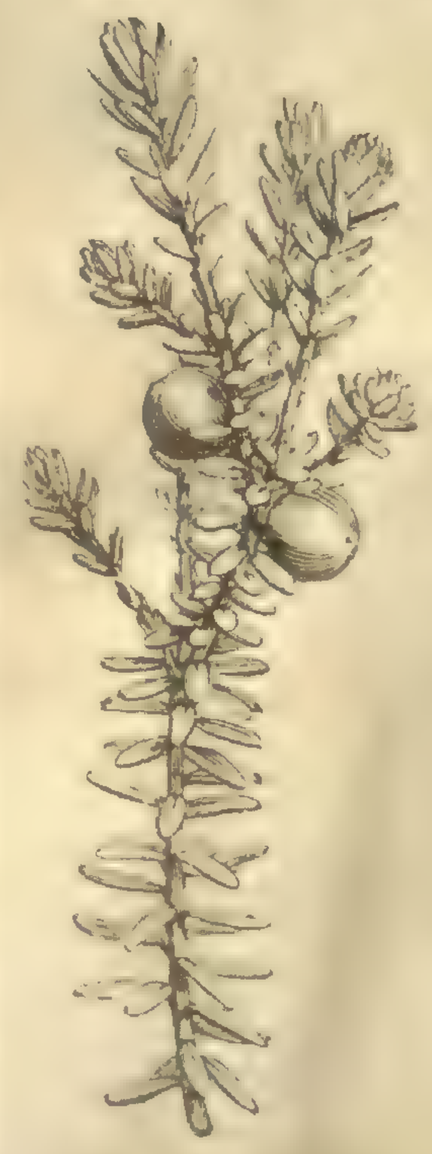

FIG. 703. FRUITING BRANCH OF EMPETRUM NIGRUM.

E. nigrum (black).* *fl.* sessile; sepals rounded, concave; petals pink, reflexed; filaments very long; anthers red. May. Berries brownish-black, globular, like those of the Juniper, edible. *l.* linear-oblong. *h.* 6in. to 12in. Distribution of the order. See Fig. 703. (Sy. En. B. 1251.)

E. n. rubrum (red).* *fl.* brownish-purple, axillary, solitary, sessile. May. Drupe red. *l.* linear-oblong, with woolly margins. *h.* 6in. to 12in. Chili and Fuegia, 1833. (B. R. 1783.)

EMPLEURUM (from *en*, in, and *pleuron*, the pleura or membrane which envelops the lungs;

Empleurum—*continued.*

seeds attached to a sort of coriaceous membrane). ORD. *Rutaceæ*. An ornamental greenhouse evergreen shrub. For cultivation, *see* **Diosma.**

E. serrulatum (serrulate). *fl.* small, axillary, solitary, or in pairs; peduncles short, bracteolate. June. *l.* alternate, linear-oblong, smooth, covered with glandular dots beneath. *h.* 2ft. to 3ft. Cape of Good Hope, 1774.

ENCEPHALARTOS (from *en*, within, *kephale*, the head, and *artos*, bread; the inner parts of the top of the trunk are farinaceous). ORD. *Cycadaceæ*. Very handsome greenhouse or conservatory plants, allied to *Cycas*; natives of tropical or Southern Africa. Leaves pinnate, thick, spiny, terminal. Trunk tall, cylindrical. Encephalartos thrive best in a strong loamy soil, with some river sand added. They are of very slow growth, unless kept in a high temperature. During the growing season, water should be copiously applied, both from water-pot and syringe; but when not making new growth, which sometimes is the case for several years, little water will be needed. Increased by seeds. Some of the species have been used most effectively in sub-tropical gardening, during the summer months.

FIG. 704. ENCEPHALARTOS ALTENSTEINII.

E. Altensteinii (Altenstein's).* *l.* pinnate, 2ft. to 6ft. in length; pinnæ oblong-acuminate, about 6in. long, 1in. broad, dark green above, paler below; apex and edges with long sharp spines; petioles much swollen at the base. Trunk stout. Cape of Good Hope, 1835. See Fig. 704. (G. C. n. s., vi. 392.)

E. A. Vromii (Vrom's). *l.* pinnate; pinnæ alternate below, opposite above, forty to fifty in number on each side of the rachis, oblong-lanceolate; apex spiny; margins with long spiny teeth; rachis marked with a prominent rounded ridge in the centre. South Africa, 1871.

E. brachyphyllus (short-leaved). *l.* pinnate, spreading; pinnæ erect, about 5in. long, ¼in. wide, stiff; apex spiny, bluish-green, paler beneath; petioles tomentose. Trunk stout. South Africa.

E. caffra (Caffrarian). Caffer Bread. *l.* pinnate, 3ft. to 4ft. long, spreading, recurved at the apex, with a very stiff texture; pinnæ linear-lanceolate, 4in. to 6in. long, 1in. broad, erectish; apex spinose. Trunk 8ft. to 18ft. high, 3ft. to 4ft. in circumference; crown scaly. South Africa. (B. M. 4903.)

E. Frederici-Guilielmi (Prince Frederick William's).* *l.* in a terminal crown, 28in. to 30in. long, oblong-obtuse, arching; pinnæ closely crowded, nearly opposite, those in the middle of the leaf 3in. long by ⅛in. broad, linear-oblong. Trunk sub-

Encephalartos—*continued.*

globose, 4in. to 6in. in circumference, woolly-tomentose. South Africa, 1879.

E. Ghellinckii (Ghellinck's). *l.* pinnate, erect, spreading out from about the middle, 2ft. to 4ft. long; pinnæ linear-filiform, densely tomentose. Trunk stout, furnished with woolly scales. Plant spineless. South Africa, 1867. (I. H. 567.)

E. Hildebrandtii (Hildebrandt's). *l.* pinnate; pinnæ numerous, lower pairs diminishing into trifid scales ½in. long, larger ones lanceolate, with distinct marginal and stronger and more crowded terminal teeth; petioles clothed at base with close cobwebby hairs. Trunk cylindrical. Zanzibar, 1877. (R. H. 1880, 456.)

E. horridus (horrid).* *l.* pinnate, 2ft. to 6ft. long, erect, abruptly reflexed at the top; pinnæ about 4in. long, with a long, sharp spine at the point. Trunk stout, short. Plant blue-green; texture harsh. South Africa, 1800. (G. C. 1865, 1131.) In the variety *trispinosus*, the inferior margin of the pinnæ is armed with three spines.

E. lanuginosus (woolly). *l.* pinnate, 3ft. to 6ft. long, erect, recurved towards the apex; pinnæ cordate-lanceolate, obtusely pointed, thick, 6in. long, 1½in. broad. Trunk 6ft. to 8ft. high, 3ft. in circumference. South Africa. Plant dark heavy green in colour, spineless.

E. Lehmanni (Lehmann's). *l.* pinnate, 6ft. long; pinnæ somewhat erect, 5in. to 7in. long, ¼in. wide, with a short brown spine at the apex. Trunk 2ft. to 3ft. in circumference. South Africa. Plant very glaucous.

E. M'Kenii (M'Ken's). *l.* about 2ft. long, pinnate; pinnæ smooth, narrowly-lanceolate, somewhat distant, with a few teeth in their upper half, the shorter lower ones more strongly toothed, while below these are two rows of branched spine-like teeth extending down to the base; petiole woolly. South Africa, 1869.

E. plumosus (feathery).* *l.* large, pinnate; pinnæ armed with stout marginal spines. Trunk thick. South Africa, 1869.

E. Verschaffelti (Verschaffelt's). *l.* pinnate; pinnæ 3in. long, linear-lanceolate. South Africa, 1875. A stout and erect-growing species.

E. villosus (hairy).* *l.* pinnate, 3ft. to 6ft. in length, tapering at the base and apex; pinnæ very numerous, spiny-toothed, 6in. to 8in. in length, 1in. in breadth, terminating in a sharp spine; petioles densely tomentose. Trunk short, thick, woolly-scaly. *h.* 6ft. Natal, 1866. (B. M. 6654.)

E. v. ampliatus (enlarged).* *l.* elegantly arching; pinnæ lanceolate, the teeth more numerous towards the tips; petiole thickly clothed at base with woolly hairs. Trunk cylindrical. 1874.

ENCHANTER'S NIGHTSHADE. *See* **Circæa.**

ENCYCLIA. A synonym of **Polystachya** (which *see*).

ENDIVE (*Cichorium Endivia*). A hardy annual, cultivated in this country since the early part of the sixteenth century, for the use of its leaves as a salad before the flower-stems appear. It is hardier than the majority of Lettuces, and in season more in the autumn and winter; its cultivation in early summer is not generally followed by good results, as the plants run so quickly to seed. Endive receives greater attention, and is cultivated more largely, on the Continent, especially in France, than in this country. It forms an important addition to salads; and, as it comes in use when few other salading vegetables are to be obtained, the cultivation should receive every attention, with a view to supplying well-blanched heads for use over as long a period in winter as possible. It is somewhat strange that many amateurs and cottagers, who consider their garden crops incomplete without a succession of Lettuces, should omit altogether the cultivation of Endive when the latter is just as easily grown, and may be sown or planted on land from which a previous crop has been taken. The means of blanching, and also of protecting, might be accomplished in various ways by those who took sufficient interest in doing it,

Endive—*continued.*

and the result would be an excellent supply of salad in many places where now the existence of the means of such supply is unknown.

Cultivation. Endive is seldom forced, and is unsuited for early summer cultivation. If, however, it is required, seed may be sown in a frame or a warm border, in April, and successional sowings made each time the previous one is well up. A first, of the Curled-leaved early sorts, should, in all cases, be made not later than the beginning or middle of July; another, of the Broad-leaved varieties, early in August; and a third in the middle or at the latter end of that month. In many gardens, Endive runs prematurely to seed when sown earlier than the dates mentioned; while in others, in cold districts, it would be advisable to precede them in each case, in order to have the plants fully grown before winter. The Curled varieties, being close-growing, more tender, and blanching quicker than those with broad leaves, should be selected for the first supply. The seed may be sown either thinly in beds, and transplanted when large enough; or in the open ground where the plants are intended to remain. A border with a south or a west aspect is best; and if a previous early crop, such as Potatoes or Peas, has been removed from the soil, it will generally be in good condition by merely levelling down. Drills, 1ft. or 1½ft. apart, may be drawn, and the seed inserted thinly, and covered with a rake. The young plants, when large enough to handle, should be thinned out to about 1ft. apart, and any blank spaces filled up. This system suits the early and main crops admirably; but those grown late for lifting are best transplanted when young, as this operation causes the production of more roots. A quick growth of the leaves should be encouraged by watering if the weather is dry, as this will also tend to prevent seeding. As soon as they are nearly full grown, blanching may be commenced, and this will be found practicable in many and various ways. Tying-up is sometimes sufficient; but, generally, inverted flower-pots, with the hole in the bottom stopped up; boards, placed at right angles over the rows, and covered with mats; frames with the glass darkened, or any other similar means, may be adopted with equally good results. The plants should, in no case, be covered except when quite dry. The blanching process takes from ten days to a fortnight, and, as Endive does not keep good for any length of time in this condition, a small quantity should be covered at frequent intervals. It is of little use unless thoroughly blanched. About the end of October, all full-sized plants should be lifted and stored close together in a frost-proof place, choosing a dry day for the operation. Any spare frames or pits may be utilised for the purpose; sheds will also be suitable for those intended to be used first, if the latter are covered and protected from frost. Where sufficient plants are grown, and means are at command for their preservation in winter, the season for Endive may be prolonged until the appearance of early Lettuces, in spring.

FIG. 705. CURLED-LEAVED ENDIVE.

Endive—*continued.*

Seed-saving. Only such plants as are true to the character of the variety should be kept for this purpose. Seed is best obtained from selected plants, which should be protected in winter by some means, and allowed to grow the following season. The flower-heads should be tied to stakes, and the seed gathered, dried, and stored, as it ripens. It will keep good for several years, and is preferred by some when rather old, as the plants are considered not liable to seed again so quickly as if it were newly-gathered.

Sorts. These may be separated into two classes: one, having narrow and much divided leaves, is called Curled Endives (see Fig. 705); the other, with larger leaves,

FIG. 706. BROAD-LEAVED ENDIVE.

not curled, being termed Broad-leaved Endives (see Fig. 706). Subjoined is a selection from the best in both classes.

BROAD-LEAVED BATAVIAN, a vigorous-growing variety, much cultivated, requires tying up; FRENCH SMALL GREEN CURLED, small, early, and very dwarf, blanches quickly; ITALIAN GREEN CURLED, dark green, narrow and much divided; LARGE GREEN CURLED, hardy, ties up well; MOSS CURLED, small, finely cut; PICPUS CURLED, a compact, close-hearted variety; SMALL BATAVIAN, broad leaves, the inner ones naturally forming a heart; STAG'S HORN, curled variety, hardy, much grown in France; WHITE BATAVIAN, broad-leaved, an excellent variety for blanching.

ENDIVE, WILD. *See* **Chicory.**

ENDOCARP. The inner membrane of a fruit; the lining of a carpel.

ENDOGENOUS. A stem is said to be Endogenous when it is formed by successive additions to its centre.

ENDOGENS. *See* **Monocotyledons.**

ENDOSPERM. The albumen of a seed.

ENGINES, GARDEN. These are of two descriptions, several forms of both being in use in gardens. One is termed a Hand Engine, from its being small and carried by the hand; the other is the Barrow Engine, so-called from being constructed on two wheels, and having a handle fixed to either side. Beyond throwing a continuous stream from the jet when in use, many of the former kind are not superior to a good syringe. A Barrow Engine is most useful for syringing trees or plants that require a force of water. Peach and other fruit-trees, either in houses or on walls outside, may be syringed frequently in the season of growth, excepting when in flower, and kept clean much more effectually by this than by any other method. This kind of Engine is also most useful for washing the glass inside of fruit and plant houses, at any time. The Barrow Engine is composed of an oval-shaped cistern, made preferably of wood, but sometimes of galvanised iron. It is invariably broader each way at the bottom than at the top. The lid is generally perforated, and either movable or fixed in two parts on hinges to the cross bridge that holds all the other parts in position. The working arrangements inside are very similar in principle to that of a force-pump, and consist of two upright cylinders, one con-

Engines, Garden—*continued.*

taining a piston and rod, and the other connected to this at the base for conducting the water, by means of a nozzle that turns round as desired, to any place within the reach of the force applied. The cylinder, with the piston inside, is connected with the water in the cistern, and has a valve at its base. On raising the piston by the handle attached to the rod at the top, the water passes into the cylinder, and the valve closes. By the next downward pressure, the water opens another valve and passes into the adjoining cylinder; and, as the latter valve will not allow it to return, and the outlet is frequently only a small hole, the water has to pass through in proportion to the size and the force applied. Many who have to use a Garden Engine almost daily in summer, have an insufficient knowledge of its construction and mode of working, and the result is that the leverage of the handle connected with the piston rod, and the great pressure of water consequently obtained, is unduly exercised, and the valves, or something else, soon become either out of order or broken. A perforated grating or rose should be placed at the base of the cylinder opening to receive the water, in order to prevent anything getting inside. Should an obstruction be caused, the use of the pump must be discontinued until the evil has been removed. These detailed remarks on the construction of the Garden Engine are given with a view to its being more generally understood and more carefully used.

ENKIANTHUS (from *enkuos*, enlarged, and *anthos*, a flower; flowers swollen). ORD. *Ericaceæ*. A genus of five species of elegant greenhouse or hardy evergreen or deciduous shrubs. Flowers white, scarlet, or rose, large, terminal, drooping; corolla campanulate, with a five-cleft limb. Leaves petiolate, coriaceous and persistent, or membranaceous and deciduous, entire or serrulate. They thrive well in a compost of loam and peat, in equal parts. Increased by cuttings, made of the ripe wood, and inserted under a bell glass, during the spring months, without heat. They should be potted carefully.

E. campanulatus (bell-shaped).* *fl.* greenish-white, tinted with red, in fascicled racemes, pendent; corolla cylindrico-campanulate. June. *l.* stalked, elliptic, argutely-serrulate, 2in. long. Japan. Hardy. SYN. *Andromeda campanulata.*

E. himalaicus (Himalayan). *fl.* in terminal umbels; corollas ¼in. long, campanulate, five-lobed, five angled, yellowish-red, with reddish streaks. June. *l.* ovate-lanceolate, acuminate. *h.* 20ft. Sikkim, 1879. Greenhouse. (B. M. 6460.)

E. japonicus (Japanese).* *fl.* white, globose, nodding. February. *l.* elliptic-obovate, membranaceous, dying off a brilliant golden-orange in autumn. Japan, 1870. A slender hardy deciduous shrub, with whorled branches. (B. M. 5822.)

E. quinqueflorus (five-flowered).* *fl.* red at the base, pale flesh-colour at the tips, large, drooping, five or six together at the tops of the branches. February to September. *l.* broad, opposite, oblong-elliptic, acuminated. Stem shrubby. *h.* 3ft. to 10ft. China, 1812. Greenhouse. SYN. *E. reticulatus.* (B. M. 1649.)

E. reticulatus (netted). A synonym of *E. quinqueflorus.*

ENSATE, or ENSIFORM. Quite straight, with the point acute, like the blade of a broad-sword, or the leaf of an Iris.

ENTADA (the Malabar name of one of the species). SYN. *Adenopodia.* ORD. *Leguminosæ.* A genus of stove climbing shrubs. Flowers white, sessile or shortly stalked, hermaphrodite or polygamous, disposed in dense spikes. Leaves bipinnate. Stems unarmed. There are about ten species, of which the one given below is the best. For culture, *see* **Mimosa.**

E. Pursætha (Pursætha). A synonym of *E. scandens.*

E. scandens (climbing). *fl.* about 1½in. long, in long slender spikes, either solitary or in the upper axils, or forming a terminal panicle; calyx very small, truncate, or minutely toothed; petals lanceolate, rigid, becoming at length quite separate. *l.* long-stalked; rachis usually ending in a tendril; pinnæ stalked, mostly four; leaflets oblong or obovate, 1in. to 2in. long, rigidly coriaceous. Legume woody, attaining 2ft. to 4ft. in length, and 3in. to 4in. in breadth. A woody climber. This is the common Sword Bean of the East and West Indies and tropical Pacific. SYNS. *E. Pursætha* and *Mimosa scandens.*

Entada—*continued.*

ENTELEA (from *enteles*, perfect; stamens all fertile). ORD. *Tiliaceæ.* An ornamental greenhouse or conservatory evergreen. It thrives well in a loamy soil, with which a little sand may be advantageously mixed. Increased by cuttings, inserted in sandy soil.

E. arborescens (tree-like). *fl.* white, in simple, lateral, or terminal erect stalked cymes; involucels of many short bracts. May. *l.* cordate, angular, doubly crenated, five-nerved, furnished with small permanent stipules, stellately downy. *h.* 20ft. New Zealand, 1820. (B. M. 2480.)

ENTIRE. Having no kind of marginal division.

ENTRANCES. The approach, or Entrance, to a mansion or any important glass structure in a garden, should at all times receive considerable attention when the designs are being prepared. In either case, it should be kept in good order, even more particularly than other parts of the garden or park. The position of a mansion and the neighbouring town or place from which the approach proceeds, must invariably form the main conditions in determining the line the latter is to take. In some cases, where the mansion is surrounded by trees, excepting a broad open view from the front, the Entrance is made at the side, and no sight of the building obtained until it is nearly reached. This applies mostly to those built on the side of a hill, or having massive trees as a background. Many others of noble proportions, built in a valley or on ground lower than that which surrounds it, have an Entrance through a broad avenue of trees planted at right angles to the front of the building, and reaching a considerable distance. Here a perspective view of the latter is obtained on first entering, that increases in magnitude until the end is reached. In either case, as many interesting views as possible of scenery, specimen trees, ornamental water, or other permanent subjects, should be introduced along the route. The Entrance being seen first and last by strange visitors to the mansion, should be made as attractive as possible, the impressions arising therefrom and afterwards communicated, tending greatly to enhance the pleasure and interest in the surroundings taken by the proprietor himself. Entrances to glass houses, such as conservatories, &c., should receive equal attention outside, in keeping clean and tidy, as that practised in the interior. Forecourts near the entrance to a mansion, if composed of gravel, should be frequently swept and rolled.

EOMECON (from *eoos*, Eastern, and *Mekon*, a Poppy; so called because of its systematic position close to the Poppies, and its native country in Eastern Asia). ORD. *Papaveraceæ.* A monotypic genus. The species is a beautiful, half-hardy, perennial herb. It thrives in any fairly good soil, and may be increased by division.

E. chionantha (snowy-flowered). *fl.* terminal, 2in. in diameter, on slender pedicels; sepals combined into a boat-shaped spathe; petals pure white, nearly orbicular, concave, spreading; stamens yellow, numerous; scapes 1ft. or more high, reddish, subpaniculately branched above. Spring. *l.* radical, long-petiolate, 3in. to 6in. long, broadly cordiform, concave, the margins broadly sinuated; petioles 6in. to 8in. long. China, 1885. (B. M. 6871.)

EPACRIDEÆ. An order of corollifloral, dicotyledonous, shrubby plants, almost confined to Australia, New Zealand, and the Antarctic islands. Flowers axillary or terminal, either solitary and terminating peduncles more or less covered with imbricated, scale-like or leaf-like bracts, or in spikes or racemes; sepals usually finely marked with parallel or diverging veins; corolla white or of various shades of red, rarely blue, green, or yellowish. Leaves alternate, or very rarely opposite, often crowded or imbricate, rigid, entire or scarcely denticulate, with several longitudinal, simple or forked nerves, sometimes prominent underneath, sometimes very fine and numerous or very obscure. The order is divided into two sections,

Epacrideæ—*continued.*

Epacreæ and *Styphelieæ*. There are about twenty-six genera, and 320 species. Well-known genera are: *Dracophyllum*, *Epacris*, *Leucopogon*, and *Styphelia*.

EPACRIS (from *epi*, upon, and *akros*, the summit; in reference to the species growing, in their native habitats, on the tops of hills). ORD. *Epacrideæ*. A genus comprising twenty-six species of ornamental, much-branched, greenhouse shrubs, of which twenty-one are Australian, four are from new Zealand, and one from New Caledonia. Flowers axillary, usually disposed in leafy spikes; corolla tubular; calyx coloured, many-bracteate. Leaves scattered, petiolate or simple at the base. These are among the most useful of winter-flowering plants, either as decorative subjects or for cut flowers. They are, as a rule, more easily propagated and grown than Heaths, and the flowers last longer in a cut state. The young plants are obtained from cuttings in a similar way to Ericas; but, as the process takes a long time, it is advisable to purchase small plants from nurserymen who propagate in large quantities. The principal object should be to obtain strong shoots, if only a few, and get them thoroughly ripened in autumn, to flower the following winter and spring. The erect-growing varieties should be pruned hard back after flowering, about March, and kept rather close until new growth commences. When the shoots are about ½in. long, any repotting required should be at once seen to, using a compost of fibry peat, with the addition of one-sixth of silver sand. Efficient drainage must be secured, and the new soil made firm round the ball, which should not be broken, nor the roots disturbed by the process. Water should be withheld from the roots for a few days, light overhead syringings being sufficient. As the plants progress, more air and sun should be admitted, until about the end of July, when they may be plunged in ashes outside. Watering should be carefully performed at all times with Epacrises, as with all plants of a similar nature. A cool greenhouse, or other structure where frost is excluded, is a suitable position for them in winter. They will, however, bear with impunity more heat and moisture at this season than the majority of Ericas. A few of the varieties are of a natural pendent habit, and these do not require severe pruning like the others, but merely shortening back. The species of Epacris have produced a large quantity of beautiful garden forms that are, in most cases, superior to the types from which they originated. All are most beautiful and useful, and may be grown on for several years, if proper attention is bestowed.

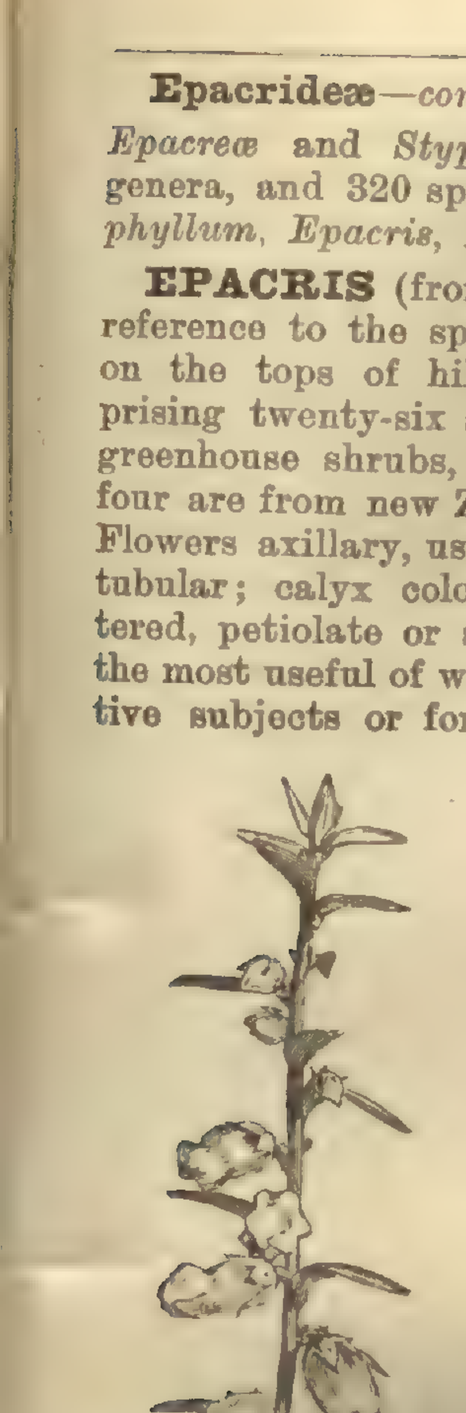

FIG. 707. FLOWERING BRANCH OF EPACRIS IMPRESSA.

E. acuminata (acuminate).* *fl.* few, nearly sessile in the uppermost axils; bracts and sepals rather broad, ciliate, acute, the sepals nearly one and a-quarter lines long; corolla tube about as long as the calyx; lobes obtuse, shorter than the tube. *l.* nearly sessile, ovate, acute or tapering to a pungent point, erect, concave, and clasping the stem at the base, spreading or recurved towards the end. *h.* 2ft. to 3ft. An erect, bushy shrub. SYN. *E. mucronulata*.

E. grandiflora (large-flowered). A synonym of *E. longiflora*.

E. impressa (flattened).* *fl.* varying from white to different shades of red, on very short peduncles; sepals more or less acuminate and ciliolate; bracts shorter and broader than the sepals; corolla tube varying from scarcely ¼in. to fully ¼in. long, from almost campanulate to narrow-cylindrical, always with five impressed cavities outside, alternating with the stamens immediately above the ovary. March. *l.* sessile, from ovate-lanceolate to lanceolate-linear, tapering into a short and rigid or longer and pungent point, narrowed, rounded, or almost cordate at the base; midribs and often lateral nerves prominent underneath. *h.* 2ft. to 3ft. An erect, loosely-branched shrub, sometimes flowering when 6in. high. See Fig. 707. (B. M. 3407.) *E. campanulata* (L. B. C. 1925), *E. ceræflora* (B. M. 3243), *E. nivalis* (L. B. C. 1821), *E. ruscifolia*, and *E. variabilis* (L. B. C. 1816), represent forms of this species varying in colour of flower and size of leaves.

FIG. 708. FLOWERING BRANCH OF EPACRIS PURPURASCENS FLORE-PLENO.

E. longiflora (long-flowered).* *fl.* usually drooping, pedicellate; bracts acute, often decussate; sepals acutely acuminate, two lines long, or rather more; corolla tube cylindrical, often slightly curved, ½in. to ¾in. long, or even more in some specimens, crimson-red, except at the end, where it is white, as well as the lobes. May and June. *l.* shortly petiolate or almost sessile, ovate or ovate-lanceolate, tapering to a point, rounded or cordate at the base, many-nerved. Branches straggling, usually pubescent. *h.* 2ft. to 4ft. An erect shrub. SYNS. *E. grandiflora* (B. M. 982) and *E. miniata* (B. R. 1845, 5).

Epacris—*continued.*

E. miniata (vermilion). A synonym of *E. longiflora.*

E. mucronulata (mucronulate). A synonym of *E. acuminata.*

E. obtusifolia (obtuse-leaved). *fl.* white, axillary, usually forming long, one-sided, leafy racemes, either almost sessile or on peduncles of above one line; corolla sometimes almost campanulate; tube shortly exceeding the calyx; lobes broad. *l.* oblong-elliptical, obtuse, thick, few-nerved, slightly concave, narrowed into a short petiole. *h.* 1ft. to 3ft. An erect shrub. (L. B. C. 292.)

E. onosmæflora (Onosma-flowered). A synonym of *E. purpurascens.*

E. pulchella (pretty).* *fl.* pale red or pink, disposed along the branches on very short stalks; calyx segments equalling the tube of the corolla. May. *l.* rather concave, each ending in a spreading point, which is not so long as the base of the leaf. *h.* 1ft. to 3ft. 1804.

E. purpurascens (purplish).* *fl.* white, or more or less tinged with red; segments of calyx acuminated, about equal in length to the tube of the corolla. January to March. *l.* ovate-acuminate, ending each in a recurved mucrone, which exceeds the base of the leaf. *h.* 2ft. to 3ft. 1803. SYN. *E. onosmæflora.* (L. B. C. 237.) There is a pretty double-flowered form of this. See Fig. 708. (G. C. n. s., v. 340.)

E. rigida (rigid). *fl.*, corolla tube broad, as long as the calyx, with five transverse thickenings inside; sepals obtuse, or rarely one or two of them almost acute. *l.* almost sessile, erect or spreading, ovate or ovate-oblong, very obtuse and thick. *h.* 1ft. to 2ft. An erect, rigid, bushy shrub.

The following is a list of the best garden varieties:

ARDENTISSIMA, DENSIFLORA, DEVONIANA, ECLIPSE, EXONIENSIS, EXQUISITE, FIREBALL, HYACINTHIFLORA, H. ALBA, H. CANDIDISSIMA, H. CARMINATA, H. FULGENS, IGNEA, KINGHORNI, LADY ALICE PEEL, LADY PANMURE, LUCIFER, MINIATA SPLENDENS, M. GRANDIFLORA, MODEL, MONT BLANC, MRS. PYM, RAMOSA, RUBRA SUPERBA, SUNSET, THE BRIDE, VESTA, VESUVIUS, VISCOUNTESS HILL.

EPHEDRA (from *Ephedra*, the Greek name used by Pliny for the *Hippuris*, or Horse Tail, which it resembles). ORD. *Gnetaceæ.* Low-growing evergreen trailing shrubs. The species (about thirty have been described) are natives of South Europe, North Africa, temperate and sub-tropical Asia, and extra-tropical America. They have small scale-like leaves, and numerous slender-jointed green branches. These curious little plants are rarely grown, but *E. nebrodensis* is very showy when covered with its scarlet berries. They are very suitable for rockwork, and require little water. Increased by layering the young shoots or branches.

E. distachya (two-spiked). A synonym of *E. nebrodensis.*

E. monostachya (one-spiked). A synonym of *E. vulgaris.*

E. nebrodensis (Nebrodean).* *fl.* whitish; catkins twin; peduncles opposite. July, August. Berries red. *h.* 3ft. to 4ft. South-western Europe, 1750. An evergreen shrub, with numerous cylindrical wand-like branches, articulated, and furnished at each articulation with two small linear leaves. SYN. *E. distachya.*

E. vulgaris (common).* *fl.* whitish; catkins solitary; peduncles many. June, July. Berries red. *h.* 1ft. to 2ft. South Europe, 1772. An evergreen shrub, much smaller and hardier than *E. nebrodensis.* SYN. *E. monostachya.* (W. D. B. ii. 142.)

EPHIPPIUM (*from ephippion*, a saddle; the labellum is in the shape of a saddle). Now included under **Cirrhopetalum.**

EPICARP. The outside covering of a fruit.

EPIDENDRUM (from *epi*, upon, and *dendron*, a tree; epiphytal on trees). Including *Physinga.* ORD. *Orchideæ.* A large genus (about 300 species) of stove and greenhouse orchids, comparatively few of which are worth cultivating, the great majority having small, dingy-coloured flowers. Dr. Lindley says the essential character of the genus resides in the lip being more or less united by a fleshy base to the edge of a column, which is hornless, and considerably elongated, but not petaloid, and winged; in the pollen masses being four, equal and compressed; and, in the presence of a passage, more or less deep, at the base of the lip. Most of the species are epiphytes, though some few succeed in pots, under the same treatment as recommended for **Cattleya** (which *see*), except that less heat is needed. Growers of orchids, according to Mr. Williams, have been more deceived in buying Epidendrums than in any other group

Epidendrum—*continued.*

of similar plants. The bulbs of many kinds are so nearly alike that it is very difficult to tell what they are before flowering. Sometimes they have to be grown several years before this occurs; and then frequently only dingy green flowers are produced, about the same colour as the leaves. Some of these insignificant flowers are, however, very fragrant, and will perfume the whole house in which they are grown. In the following enumeration, the most beautiful and approved sorts only are included.

E. alatum majus (large-winged).* *fl.* pale yellow, disposed in straggling panicles, and remaining nearly six weeks in beauty; lip striped with purple. June, July. Guatemala. Greenhouse. SYN. *E. calochilum.* (B. M. 3898.)

E. aloifolium (Aloe-leaved). A synonym of *E. falcatum.*

E. atropurpureum (dark-purple).* *fl.*, sepals and petals dark rose or purple, the apices greenish, incurved; lip rose-coloured, with a dark blotch of crimson-purple in its centre. May, June. *h.* 6in. to 12in. Mexico, 1836. This species succeeds well either in a shallow pan or on a block, with sphagnum. Greenhouse. SYN. *E. macrochilum* (B. M. 3534). The variety *roseum* (F. d. S. 372) has the lip wholly of a dark rose colour.

E. aurantiacum (golden).* *fl.* bright orange, produced from a sheath at the top of the bulb, five to ten in a cluster; lip orange, striped with crimson. March to May. *h.* 1ft. Guatemala, 1836. A very handsome stove species. In habit and structure, it approaches *Cattleya Skinneri.* (R. G. 138.)

E. bicameratum (two-arched). *fl.* ochre-coloured, with a deep brown disk; lip white, ochre-coloured at the base. Mexico, 1871. Greenhouse.

FIG. 709. SINGLE FLOWER OF EPIDENDRUM BICORNUTUM.

E. bicornutum (two-horned).* *fl.* pure white, with a few crimson spots in the centre of the lip; spike produced from the tops of the pseudo-bulbs, sometimes twelve-flowered. Summer. Pseudo-bulbs stout, 1ft. to 1½ft. high, hollow in the centre, and producing short leathery leaves near the apex. Trinidad. This curious, but handsome stove species is sometimes found difficult to grow. It has, however, succeeded upon a bare block of wood, in a high temperature, fully exposed to the sun, and supplied with abundance of atmospheric moisture when making its growth. Occasionally, it grows and flowers well annually, treated in a precisely similar way to Cattleyas. See Fig. 709. (B. M. 3332.) This species, together with about three others, also formerly included under *Epidendrum*, now constitute the genus *Diacrium*, and the correct name of this plant is *Diacrium bicornutum.*

E. Brassavolæ (Brassavola). *fl.* 4in. in diameter, on long, many-flowered spikes; sepals and petals rich yellowish-brown; lip large, ovate, straw-coloured at the base, with the apex purple, sweet-scented in the evening. Guatemala, 1867. Greenhouse. (B. M. 5664.)

E. calochilum (beautiful-lipped). A synonym of *E. alatum majus.*

E. Catillus (Catillus). *fl.* cinnabar-red, in clusters. Columbia, 1873. Greenhouse. (I. H. n. s. 162.)

1. Epidendrum cochleatum. (snail-shell like)
See Suppl. 1900 - 1:342. - Stent. Indeis

2.

Epidendrum—*continued.*

E. cinnabarinum (cinnabar-red). *fl.* orange-red, crowded at the top of a slender scape, 2in. across. May to July. *h.* 4ft. Brazil, 1837. Stove. (B. R. 1842, 25.)

E. cnemidophorum (sheathed).* *fl.* light yellow, spotted brown inside, pure white at back; lip white, shaded rose, deeply divided; spike terminal, about 1ft. long. *l.* about 8in. long, glossy, acuminated. *h.* 4ft. to 6ft. Guatemala, 1867. A stately greenhouse plant, with ample drooping racemes. (B. M. 5656.)

E. Cooperianum (Cooper's). *fl.* brownish-yellow; lip broad, rosy-purple; racemes terminal, drooping. *l.* lanceolate, acute. *h.* 2ft. to 3ft. Brazil, 1867. Stove. (B. M. 5654.)

E. crassifolium (thick-leaved). A synonym of *E. ellipticum.*

E. criniferum (hairy-lipped). *fl.* yellowish-green, with cinnamon blotches and bars; lip white, hairy. Costa Rica, 1871. Greenhouse. (B. M. 6094.)

E. dichromum (two-coloured).* *fl.* light rose-coloured, about 2in. in diameter, produced in large panicles, 2ft. to 3ft. high; lip three-lobed, rich crimson; pseudo-bulbs short and stout, supporting two or three dark green leathery leaves, from 6in. to 12in. or more in length. Pernambuco, 1865. Greenhouse. The variety *striatum* is a very handsome one, having sepals and petals white, with radiating deep purple lines.

E. eburneum (ivory). *fl.*, sepals and petals yellowish-green; lip very large, ivory-white, with yellow callosities; raceme terminal, four to six-flowered. *l.* alternate, large, deep green. *h.* 2ft. Panama, 1867. Greenhouse. (B. M. 5643.)

E. ellipticum (elliptic). *fl.* rose-coloured. March to June. *h.* 2ft. to 3ft. Brazil. Greenhouse. SYN. *E. crassifolium.* (B. M. 3543.)

E. erubescens (blushing). *fl.* produced in large panicles; sepals and petals of a delicate mauve colour, broad; lip rather darker, yellow at the base. Mexico, 1837. This very desirable greenhouse species is somewhat difficult to grow; but it has been found to thrive well on long blocks of wood, in a cool house.

E. evectum (extended).* *fl.*, racemes loose, sub-cylindric, many-flowered; perianth bright rose-purple; sepals and petals similar, narrow-obovate, obtuse; lip adnate to the column, rather longer than the sepals, three-lobed nearly to the base; lobes all deeply cut and fringed. *l.* sessile, oblong-lanceolate, obtuse, emarginate, coriaceous, plane; sheaths rather short. Native country unknown, but probably from New Grenada. A very handsome stove species. (B. M. 5902.)

E. falcatum (falcate).* *fl.* fragrant, one or two together; sepals and petals greenish-yellow; lip brighter yellow, not fringed. Summer. Mexico, 1835. Stove. This plant remains in full beauty for a considerable time. SYNS. *E. aloifolium* and *E. Parkinsonianum.* (B. M. 3778.)

E. Frederici Guilielmi (Prince Frederick William's). *fl.* produced in large terminal panicles; sepals and petals dark purple, about 1in. long, lanceolate; lip trilobed; apex of the column and the disk pure white. *l.* distichous, 6in. to 8in. long, 1in. to 2in. broad, dark green. Peru, 1871. Stove. (I. H. n. s. 48.)

E. Grahami (Graham's). A synonym of *E. phœniceum.*

E. Hanburii (Hanbury's). *fl.*, sepals and petals deep, dull purple; lip rose, veined with crimson. Spring. *h.* 2ft. Mexico, 1843. Greenhouse. (R. G. 398.)

FIG. 710. SINGLE FLOWER OF EPIDENDRUM LINDLEYANUM.

E. Lindleyanum (Lindley's).* The correct name of the plant described in this work under its generally-recognised name of *Barkeria Lindleyana.* Stove. See Fig. 710.

Epidendrum—*continued.*

E. macrochilum (large-lipped). A synonym of *E. atropurpureum.*

E. myrianthum (many-flowered). *fl.* bright rosy-purple, small, in enormous panicles. Autumn. *l.* distichous, linear-oblong or lanceolate. Stems 3ft. to 4ft. high. Guatemala, 1866. This rare, free-flowering species grows best in a cool house. (B. M. 5556.)

E. nemorale (wood).* *fl.* about 3in. across, freely produced on large drooping panicles; sepals and petals of a delicate mauve or rosy-lilac, lanceolate; lip striped with violet. July. Pseudo-bulbs from 3in. to 5in. high, two-leaved. Mexico, 1840. This is a splendid stove species, but somewhat difficult to manage successfully, the fault, in most instances, being in keeping too much soil about its roots, and in not exposing it to the full sun. (B. M. 4606, under name of *E. verrucosum.*)

E. n. majus (larger). *fl.* produced in panicles, sometimes 3ft. in length; sepals and petals delicate rosy-mauve; lip white in the centre, with three short red lines, bordered deep rose. Stove.

E. paniculatum (panicled).* *fl.* purple or lilac-purple, with some yellow at the tip of the column, very numerous, disposed in a large terminal branched drooping panicle, upwards of 1ft. long. *l.* distichous, lanceolate-acuminate. Stems tall, reedy, 2ft. to 4ft. high. New Grenada, 1868. Greenhouse. One of the finest of the paniculate Epidendrums, and perhaps the most free-flowering of all orchids. (B. M. 5731.)

E. Parkinsonianum (Parkinson's). A synonym of *E. falcatum.*

E. phœniceum (purple). *fl.*, sepals and petals deep purple, mottled with green; lip clear bright violet, veined and stained with crimson. Summer. *h.* 6in. to 12in. Cuba, 1840. A handsome, large-flowered stove species, with branching panicles, 2ft. to 3ft. high. SYN. *E. Grahami.* (B.M. 3385.)

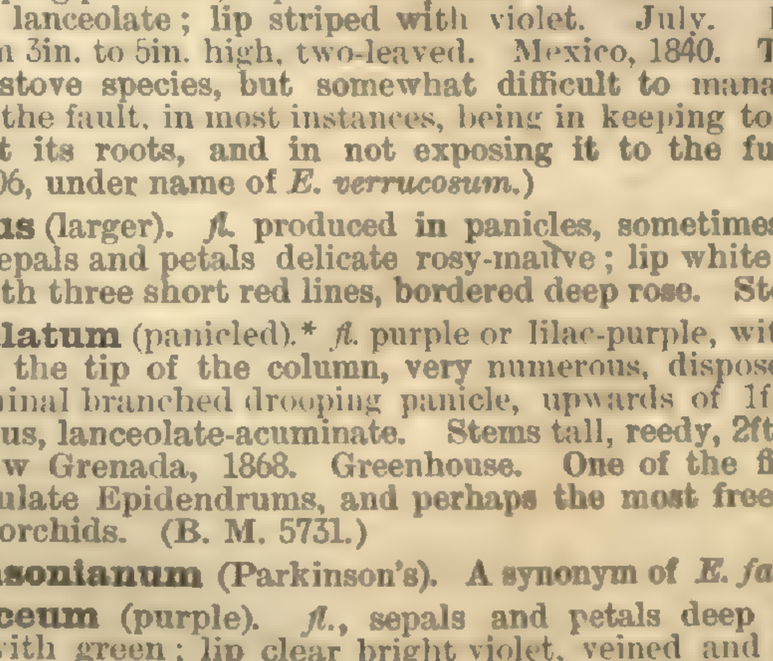

FIG. 711. SINGLE FLOWER OF EPIDENDRUM PRISMATOCARPUM.

E. prismatocarpum (prism-fruited).* *fl.* fragrant, ten to twelve on each erect raceme; sepals and petals yellow-green, spotted with dark purple or black; lip lilac-purple, bordered with white. June. Pseudo-bulbs flask-shaped, 10in. to 12in. in height, and, together with the evergreen leaves, dark green. Central America, 1862. Greenhouse. See Fig. 711. (B. M. 5336.)

E. pseudepidendrum (false Epidendrum). *fl.*, raceme terminal, few-flowered; perianth bright green, except the lip and upper part of the column, which are orange-vermilion; lip (free portion) sub-orbicular, retuse or emarginate from the end being recurved; margin erose and obscurely lobed. July. *l.* confined to the top of the stems, distichous, sub erect, narrowly linear-oblong, acuminate, coriaceous, obscurely nerved at the back, deep green; back keeled; margins recurved. Central America, 1871. An extremely curious greenhouse species. (B. M. 5929.)

E. radicans (rooting). *fl.* dark orange-red, remaining in beauty for a considerable period, produced in long, terminal racemes. Guatemala, 1836. A pretty scandent greenhouse species, sometimes reaching 10ft. in height, and requiring the support of a stake. SYN. *E. rhizophorum.* (P. M. B. xii. 145.)

E. raniferum (frog-bearing). *fl.* yellowish-green, thickly studded with purple-brown spots, about 2in. in diameter, numerously disposed in pendulous racemes. *l.* oblong, acute. Mexico, 1839. Greenhouse. One of the most attractive species of the genus. (F. M. n. s. 445.)

E. rhizophorum (rooting). A synonym of *E. radicans.*

E. Sophronitis (Sophronitis-like). *fl.* dull yellow-green, mottled with dull violet-purple. May and June. *l.* two or three at the tip of the pseudo-bulb, 2in. to 3in. long, spreading, oblong lanceolate, acute, thickly coriaceous, keeled, clothed on both surfaces with a pale glaucous-green, waxy secretion; margins purple. Pseudo-bulbs ovoid, green. Peru, 1867. Greenhouse. This is one of the most singular species of the genus. (B. M. 6314.)

E. Stamfordianum (Stamford's). *fl.* bright yellow and green thickly spotted with crimson, numerously produced on a branching spike. April, May. Guatemala, 1836. Greenhouse. (B. M. 4759.)

Epidendrum—*continued.*

E. syringothyrsis (Lilac-like).* *fl.* dark purple, with a little orange and yellow on the lip and column, in branching panicles, seventy to eighty-flowered. *l.* distichous, about 6in. long, light green. Stems slender, about 3ft. high. Bolivia, 1866. Stove. The specific name is derived from its resemblance to the Lilac in form and colour. (B. M. 6145.)

E. vitellinum (yolk-of-egg-coloured). *fl.* bright orange-scarlet, about 2in. in diameter; lip bright yellow; spike erect, ten to fifteen-flowered. Summer. *l.* and pseudo-bulbs glaucous. Mexico, 1840. It thrives best in a warm temperature and damp atmosphere. (B. M. 4107.) The variety *majus* is a handsome form, with considerably larger flowers, and broader sepals and petals, than the type.

EPIDERMIS. The transparent colourless membrane which covers almost all parts of plants exposed to the outward air, and is composed of one or more layers of firmly coherent, usually empty, cells.

EPIGÆA (from *epi*, upon, and *gaia*, the earth; in reference to its trailing growth). ORD. *Ericaceæ*. A genus of a couple of species of very elegant creeping, tufted, hardy evergreen shrubs. *E. repens* thrives only in peat soil and in shady situations. Increased by careful divisions of well-established tufts. The second species, *E. asiatica*, a Japanese plant, is not yet in cultivation.

E. repens (creeping).* Ground Laurel; in New England, called Mayflower. *fl.* white, tinged with red, in dense axillary and terminal racemes, exhaling a rich spicy fragrance. May. *l.* cordate-ovate, entire. Branches, petioles, and nerves of leaves very hairy. Northern United States, 1736. (G. W. F. A. 37.)

EPIGYNIUM. Included under **Vaccinium** (which *see*).

EPIGYNOUS. Growing upon the ovary. A term applied when the outer whorls of the flower adhere to the ovary.

FIG. 712. UPPER PORTION OF STEM OF EPILOBIUM ANGUSTIFOLIUM.

EPILOBIUM (from *epi*, upon, and *lobos*, a pod; flower seated as if it were upon the top of the pod). Willow-herb. ORD. *Onagrarieæ*. A genus of fifty species of hardy perennial herbs or sub-shrubs, occurring in all cold and temperate climates. Most of the species are of botanical interest only, but some are highly ornamental. Flowers axillary, solitary, or disposed in terminal spikes, each flower furnished with a bract. Leaves opposite, or irregularly scattered. They are of the easiest possible culture, in ordinary garden soil. Increased by divisions or seeds. As border plants, and for naturalisation in shrubberies and by watercourses, *E. angustifolium* and *E. hirsutum* are eminently well suited.

E. angustifolium (narrow-leaved).* French Willow, or Rose-bay. *fl.* crimson, disposed in spicate racemes, bracteate. July. *l.* nearly sessile, lanceolate, undulated. Stems erect, nearly simple. *h.* 3ft. to 6ft. Northern hemisphere (Britain). A very handsome species, but, from the rapidity with which it spreads, it should be wholly confined to shrubberies. See Fig. 712. (Sy. En. B. iii. 495.)

E. angustissimum (very narrow-leaved). A synonym of *E. rosmarinifolium*.

E. denticulatum (denticulate). *fl.* rose-coloured. Summer. *l.* somewhat lanceolate, denticulated; lower ones opposite. Stems suffruticose. *h.* 6in. to 12in. Peru.

E. Dodonæi (Dodoens').* *fl.* deep rose, large; pedicels connected with the bracts, crowded near the tops of the branches. July. *l.* linear, obsoletely denticulated. Stems erect, branched at the apex. *h.* 1ft. Europe, 1800. SYN. *E. Halleri*.

E. Halleri (Haller's). A synonym of *E. Dodonæi*.

FIG. 713. UPPER PORTION OF STEM OF EPILOBIUM HIRSUTUM.

E. hirsutum (hairy).* Codlins and Cream. *fl.* usually pale pink, sometimes white, large, disposed in a leafy, corymbose cluster. July. *l.*, lower ones opposite; upper ones alternate, ovate-lanceolate, hairy, toothed, half stem-clasping. *h.* 3ft. to 5ft. Europe (Britain), &c. The whole plant is downy, soft, and clammy, exhaling a peculiar acidulous scent. See Fig. 713. (Sy. En. B. 497.)

E. obcordatum (obcordate).* *fl.* bright rose-purple, large. Summer. *l.* opposite, ovate, sessile, numerous, mostly longer than the internodes (four to eight lines long), glaucous, opaque. Sierra Nevada, &c., California. A very charming low-growing alpine species, requiring a moist, well-drained spot in rockery.

E. rosmarinifolium (Rosemary-leaved).* *fl.* red; pedicels connected with the bracts, crowded near the tops of the branches. July. *l.* linear, obsoletely denticulated. Stems erect, branched towards the middle. *h.* 2ft. Europe, &c., 1775. SYN. *E. angustissimum*. (Sy. En. B. 494.)

EPIMEDIUM (from *epi*, upon, akin to, and *Medion*, a plant, said to grow in Media; a name from Dioscorides, retained by Linnæus). Barrenwort. ORD. *Berberideæ*. Ornamental hardy herbaceous perennials, with creeping perennial trunks, and annual stems. Flowers various-coloured. Leaves stalked, compound; leaflets awnedly-serrated. They form admirable plants for rockwork, and will thrive in a compost of fresh loam and peat, in equal proportions. Propagated by divisions of the root, which should be made during July or August.

FIG. 714. EPIMEDIUM ALPINUM.

E. alpinum (alpine).* *fl.* twelve to twenty in a lax panicle; outer sepals greyish; inner ones dark crimson; petals yellow, composed almost entirely of a slipper-shaped spur. *l.* biternate; leaflets cordate-ovate, acuminated, serrated. *h.* 6in. to 9in. Central Europe (naturalised here and there in Britain). See Fig. 714. (Sy. En. B. 52.)

E. a. rubrum (red). A synonym of *E. rubrum*.

E. diphyllum (twin-leaved). *fl.* white, numerous, small; peduncles bearing four to six drooping flowers in a simple, very lax raceme; petals not spurred. April and May. *l.*, petiole 2in. to 3in. long, bearing two (only) cordate-ovate leaves. Japan, 1830. The dwarfest species of the genus. SYN. *Aceranthus diphyllus*. (B. M. 3448.)

E. macranthum (large-flowered).* *fl.* white; raceme short, close, six to ten-flowered; spur of petals deflexed, ⅓in. long. Early spring and summer. *l.* about 1ft. in length, biternate; leaflets nine, cordate-ovate, 2in. to 3in. long, closely ciliate-dentate. *h.* 10in. to 15in. Japan, 1836. This fine species is the handsomest of the genus. (B. R. 1906). *E. violaceum* (B. M. 3751) is a variety of the foregoing, from which it differs in being dwarfer in habit, and in having smaller violet-coloured flowers. There are several other garden forms, more or less distinct.

E. Musschianum (Mussche's).* *fl.* dull white; peduncles few-flowered; racemes simple, close, short. May. *l.* biternate, about 6in. long; leaflets nine, cordate-ovate, 2in. to 3in. long. Japan, 1836. (B. M. 3745.)

E. Perralderianum (Perraudière's). *fl.*, when expanded, bright yellow, ⅜in. to ½in. in diameter; raceme simple, lax, about as long as the peduncle, twelve to twenty-flowered; outer sepals minute, oblong, deciduous; inner sepals orbicular, much imbricated, and spreading horizontally when fully expanded; petals with a bright yellow, toothed, erect lamina, and an incurved ligulate brown spur, nearly as long as the lamina. *l.*, leaflets usually three, cordate-ovate, 2in. to 3in. long, bright green or tinted with red-brown. Algeria, 1867. This species is closely allied to *E. pinnatum*. (B. M. 6509.)

E. pinnatum (pinnate).* *fl.* bright yellow; raceme lax, simple, 6in. long, twelve to twenty-flowered; peduncles about 6in. in length. Summer. *l.* radical, 1ft. to 1½ft. long, tripinnate; leaflets stalked, ovate-acute, serrated. *h.* 8in. to 2ft. Persia, 1849. A handsome strong-growing species. See Fig. 715. (B. M. 4456.)

FIG. 715. EPIMEDIUM PINNATUM, showing Habit and detached Flower.

E. rubrum (red).* *fl.* when fully expanded, ⅝in. to ¾in. in diameter, in a lax panicle, springing from the side of the common petiole, 1in. or 2in. below its apex; outer sepals greyish, oblong, soon deciduous; inner sepals bright crimson, oblong-lanceolate, very convex on the back, spreading horizontally when the flower is fully expanded; petals pale yellow or tinted with red, with a small but distinct erect limb. *l.* varying from biternate to almost triternate; leaflets sometimes as many as twenty. Native country doubtful. 1854. This species entirely resembles *E. alpinum* in habit, but is more robust. SYN. *E. alpinum rubrum*. (B. M. 5671.)

EPIPACTIS (*Epipaktis*, a plant of Dioscorides; from *epipegnuo*, to coagulate; referring to its effect on milk). Helleborine. ORD. *Orchideæ*. A genus of eight species of very pretty hardy orchids, natives of Europe and Russian Asia, except the extreme north. Flowers purple, brown, or white, rarely tinged with red, in a loose raceme; perianth spreading; petals shorter than the sepals, but otherwise similar; lip free from the column, thick and concave at the base, the terminal portion broad and petal-like, with two protuberances at the base. Stem leafy. They are of easy culture in shady woods, in friable loam mixed with chalk, and form excellent subjects for naturalising in artificial bogs, or in moist peaty spots. Increased by divisions. The two following species represent the genus in Britain.

E. latifolia (broad-leaved). *fl.*, greenish purple, drooping; spike long, loose; lower bracts longer than the flowers. Late summer. *l.* orbicular, ovate or oblong, embracing the stem. Stem from 1ft. to 2ft. high. (Sy. En. B. 1480.)

E. palustris (marsh). *fl.* whitish, tinged with crimson, slightly drooping, few, forming a loose ovate spike. July. *l.* lanceolate, embracing the stem. Stem about 1ft. high. (Sy. En. B. 1482.)

EPIPETALOUS. Growing on petals.

EPIPHLŒUM. The layer of bark immediately below the epidermis.

EPIPHORA. A synonym of **Polystachya** (which *see*).

EPIPHYLLOUS. Growing upon a leaf.

EPIPHYLLUM (from *epi*, upon, and *phyllon*, a leaf; the flowers arise from the flat branches, which appear like leaves). ORD. *Cacteæ*. A genus of three species of very handsome, branched, slender, climbing stove sub-shrubs, all natives of Brazil. Flowers solitary, usually

Epiphyllum—*continued.*

large and showy; tube of corolla furnished with remote unarmed scales, rising from the crenatures of the branches, among small spines; limb of corolla deeply multifid. Branches much compressed, two-edged, thin, but fleshy, lobately crenated, green, smooth. Epiphyllums are among the most highly coloured and beautiful of winter-flowering plants. They are not very fast-growing, and are, in consequence, most useful for decorating either large or small plant houses. Being of a dense trailing or dependent

Epiphyllum—*continued.*

habit, they show best when grafted on a small tree-like stock. Although the species are few, the varieties are somewhat numerous, and are nearly all richly coloured and attractive.

FIG. 716. EPIPREMNUM MIRABILE (see page 517).

PROPAGATION. This may be effected by short cuttings, taken from the branches, inserted singly in small pots, and placed in heat. The branches being unable to support themselves in an upright position when growing, this plan of cultivation is not much practised, except for use in

Epiphyllum—*continued.*

baskets or in other positions where they are intended to hang down. For growing in pots, the general system adopted for Epiphyllums is to graft them on stocks, that may be first grown from cuttings to almost any desired height. The plants used as stocks are *Pereskia aculeata* and *P. Bleo*. These strike readily in sandy soil, at any season, and should afterwards be potted and grown upright, until they reach the required height, which may vary from 1ft. to 5ft. Grafting is easily performed, as it consists in merely pulling out a short branch just as growth commences, in spring, afterwards opening the stock either on the top or at any part of the side that is sufficiently hard, inserting the back part of the branch, and then passing one of the sharp spines from the *Pereskia* stock right through, to hold all firmly. No other covering need be applied if the plants are in a moist, warm atmosphere. *P. Bleo* grows stronger, and is, on that account, suitable for tall specimens, while *P. aculeata* is more common and is generally used for dwarf or medium-sized standards. By grafting at short distances up the stem, pyramid plants may be obtained by a system of training, that have a fine effect when in flower. Large pyramids have also been grown from cuttings for exhibition purposes.

CULTIVATION. Epiphyllums succeed in sandy loam, with the addition of a little leaf soil and mortar rubbish. Good drainage is necessary, and rather small pots, in proportion to the size of head, will be sufficient. After grafting, the plants should be grown on in heat until autumn, when they should be kept drier, and allowed to rest. Start them again in February, and grow in a light position, allowing plenty of air in the latter part of the summer, to thoroughly ripen the growths. The plants will have formed nice heads by this time, and may be introduced to warmer quarters, for flowering, a few at a time, so as to prolong the season. A temperature of 45deg. will be high enough in the autumn, and only sufficient water to prevent shrivelling should be applied. The flowers will open in a temperature of 60deg., and may then be removed to a cooler position. After flowering, any necessary repotting should be performed, and the same routine again followed. When established in tolerably large pots, it is often best not to disturb the roots, but apply a top-dressing of good soil instead. Epiphyllums increase in size for several years, if they can be kept in good health. They may be used with fine effect to cover the back wall of a stove. A trellis, far enough from the wall to allow of soil being placed for planting, might be fixed, and the soil inclosed and hidden by Selaginellas, or plants of similar habit. For this purpose, plants struck from cuttings are most suitable. The flowers are produced at the ends of the flattened branches.

E. Russellianum (Russell's). *fl.* delicate rose colour. May. This is a form from Brazil, with doubtful specific claims, but sufficiently distinct for horticultural purposes. (B. M. 3717.) There are two or more varieties, including *rubrum*, with much larger bright rosy-red flowers; and *superbum*, with purple flowers, having a white throat.

E. truncatum (truncate).* *fl.* red or rose-coloured, hardly 3in. long, oblique, rising from the truncate tops of the branches; stamens white; corolla reflexed, ringent; tube very short. Branchlets dichotomous, truncate at the apex. Joints of stem compressed. 1818. (B. H. 1866, 15.) SYN. *Cactus truncatus* (B. M. 696). There are several varieties of this fine plant, of which the following is a selection: *bicolor*, white, edged with rose; *coccineum*, rich deep scarlet; *elegans*, bright orange-red, centre rich purple; *magnificum*, flowers large, white, tips bright rose-coloured; *roseum*, bright rose; *Ruckerianum*, deep reddish-purple, with a rich violet centre; *salmoneum*, reddish-salmon; *spectabile*, white, with purple margin; *violaceum*, flowers large, pure white, with delicate purple margin; *violaceum superbum*, pure white, rich deep purple edge.

EPIPHYTES. Plants growing upon the surface of others without deriving any nutriment from them; as, for example, many orchids and mosses. They are frequently spoken of as Air Plants.

EPIPREMNUM (from *epi*, upon, and *premnon*, a trunk; in allusion to the species rooting upon the trunks of trees). ORD. *Aroideæ* (*Araceæ*). A genus of about eight species of climbing stove plants, from the Malayan Archipelago and the islands of the Pacific. Spathe thick, boat-shaped; spadix included, thick, cylindrical, dense-flowered. Leaves ovate, ovate-cordate or lanceolate, often large, entire or pinnatifid; petiole sheathing at the base. For culture, *see* **Monstera.**

E. mirabile (wonderful). Tonga Plant. This is an "ornamental climber, of rapid growth, with bold dark green pinnatisect leaves in the adult stage, and large inflorescences, resembling those of a Monstera. It is a very suitable plant for trailing up pillars, trunks of palms, tree-ferns, &c., or the back wall of a stove; and, besides its ornamental character, it is specially interesting for the manner in which the plant changes in appearance as it develops from its juvenile state with small entire leaves to its adult flowering stage with large pinnatisect leaves; as well as for its medicinal qualities, which appear to have been long known to the natives of the countries the plant inhabits" (N. E. Brown). Fiji. See page 516, Fig. 716, for which we are indebted to Mr. Wm. Bull.

EPISCIA (from *episkios*, shaded; occurring, in their native habitats, in shady places). As now understood, this genus includes *Alsobia*, *Centrosolenia*, *Cyrtodeira*, *Nautilocalyx*, *Physodeira*, and *Sktophila*. ORD. *Gesneraceæ*. Very beautiful stove herbaceous perennials. About thirty species have been described, all New World plants, dispersed over Central America and the West Indies. Flowers axillary, solitary, or in little cymes; corolla funnel-shaped. Leaves opposite, petiolate, alike or dissimilar. For cultivation, *see* **Gesnera.**

E. bicolor (two-coloured).* *fl.* white, bordered with purple, erect or inclined; calyx hairy, deeply five-cleft into five nearly erect linear-lanceolate sepals, recurved at the apex; corolla white, gibbous on one side at the base, dilated above, tumid beneath, within spotted with purple; tube rather short; peduncles slender, hairy, from the axils of the leaves. *l.* large, hairy, between ovate and cordate, spreading, somewhat glossy, acute, penninerved and coarsely reticulated; petioles short, hairy. *h.* 3in. New Grenada. A somewhat creeping, procumbent plant. (B. M. 4390.)

E. chontalensis (Chontalese).* *fl.* lilac, with a yellow centre, and a whitish tube, nearly 2in. across. November and December. *l.* ovate, or ovate-oblong, acute, sub-cordate at the base, purple on the under side, and light green on the upper surface. *h.* 6in. Nicaragua, 1867. (B. M. 5925.)

E. cupreata (coppery).* This is the correct name of plant described under *Achimenes cupreata*.

E. c. viridifolia (green-leaved). This closely resembles the type, differing from it only in the much larger flowers, and in the absence of the coppery tinge to the foliage. New Grenada, 1860. An elegant plant. (B. M. 5195, under name of *Cyrtodeira cupreata*.)

E. erythropus (red-stalked). *fl.* fascicled in the axils of the leaves, on slender, single-flowered peduncles, about 1in. to 2in. long; calyx divisions subulate lanceolate, quite entire, green; corolla pale flesh-coloured, with orange-purple spots within the yellow throat and tube; limb oblique, nearly flat; lobes orbicular. *l.* sub-radical, oblanceolate, cordate-acuminate, decurrent on the stout petiole, irregularly toothed, bright green above, suffused with red beneath; midrib and petiole very stout, blood-red; nerves many, arching, very red. New Grenada, 1874. (B. M. 6219.)

E. fulgida (shining).* *fl.*, corolla bright and almost vermilion-red; tube hirsute, 1½in. long, cylindric, nearly straight; limb 1in. in diameter, nearly equal; lobes rounded, irregularly toothed; peduncles axillary, solitary, stout, 1in. to 2in. long. July. *l.* 3in. to 5in. long, elliptic, or elliptic-ovate, acute, crenulate serrate, convex, bullately reticulated on the upper surface, dark emerald green, paler along the midrib, and inclined to coppery. *h.* 6in. New Grenada, 1873. (B. M. 6136.)

E. melittifolia (Melittis-leaved). *fl.*, corolla crimson; tube longer than the calyx, curved downwards, with an obtuse spur at the base above; limb of five, nearly equal, rounded, spreading lobes; peduncles few, rarely single-flowered. April, May. *l.* upon long petioles, large, nearly elliptical, obtuse at the base, acute at the apex; margin coarsely doubly crenate, dark green, glossy, wrinkled above, with the sunk reticulated veins; pale beneath. *h.* 1ft. Dominica, 1853. (B. M. 4720.)

E. villosa (shaggy).* *fl.* axillary, generally ternate and spreading, so as to form pseudo-verticils; pedicels short, single-flowered; calyx gibbous at the base, above deeply cut into five large, much acuminated segments; corolla white, villous externally, the tube gibbous at the base above, curved, compressed, the mouth spreading, within on the lower side marked with purple rounded lobes. May and June. *l.* opposite, petioled, ovate, acute or acuminate, coarsely serrated, villous with spreading hair, strongly reticulated and rugose, the nerves prominent beneath, and then tomentose; petioles thick, woolly, and villous. Branches erect, obtusely tetragonal, thickly hairy and woolly. *h.* 1ft. to 1½ft. Surinam. A distinct and handsome species. (B. M. 4866, under name of *Drymonia villosa*.)

EPISTEPHIUM (from *epi*, upon, and *stephas*, a crown; at the base of the perianth there is a small toothed calyculus). ORD. *Orchideæ*. A genus of half-a-dozen species of beautiful stove terrestrial orchids, allied to *Sobralia*, natives of Southern tropical America. Roots fleshy, fibrous, underground. Perhaps the only one which has been introduced is that here described. It thrives in good fibrous loam and sand; perfect drainage and copious supplies of water are essential elements in its culture. Propagated by division.

E. Williamsii (Williams's).* *fl.* bright reddish-purple, large; spike terminal, six to eight-flowered. *l.* very dark, shining. *h.* 1ft. Bahia, 1864. (B. M. 5485.)

EQUISETACEÆ. An order of interesting cryptogams, which takes its name from the genus *Equisetum*, the only one the order contains. There are about twenty-five species, chiefly found in temperate Northern regions; a few are sub-tropical. One of the latter group (*E. Martii*), recently introduced to Kew from Brazil, attains, in its native habitats, the enormous height of 30ft. "Dutch Rushes," used for scouring and polishing, are the stems of *E. hyemale*; their roughness is due to a deposit of siliceous particles in the epidermis.

EQUISETUM (from *equi*, of a horse, and *seta*, a hair). Horsetail. ORD. *Equisetaceæ*. A genus of leafless herbs, with a perennial, usually creeping rootstock, and erect, rush-like hollow and jointed stems, marked with longitudinal furrows, with a sheath at each joint, inclosing the base of the next internode. Some of the species of this neglected genus are well worth growing in wet, shady spots, and in similar situations in the rock garden. Increased by division.

E. maximum (largest). *cones* large. Sterile stems 3ft. to 6ft. high, twenty to forty-grooved, furnished with whorls of slender, sub-erect branches. Fertile stem stout, about 1ft. high, with many pale-brown sheaths; teeth two-ribbed. Northern hemisphere (Britain). A very fine plant when well grown. SYN. *E. Telmateia*.

E. sylvaticum (wood).* *cones* ovoid-oblong, obtuse. Stems ten to eighteen-grooved; branches recurved or deflexed, divided; stem sheaths lax; teeth long, obtuse; teeth of branch sheaths three-ribbed to the top. Northern hemisphere (Britain). A very pretty plant for pot culture in a conservatory. Readily recognised by the elegant appearance of the whorls of compound, recurved branches.

E. Telmateia (Telmateia). A synonym of *E. maximum*.

EQUITANT. When the two sides of a leaf are brought together, and adhere except at the base, where they inclose an opposite leaf, whose sides are in the same state. Hence they look as if they rode on each other.

ERAGROSTIS (from *eros*, love, and *agrostis*, grass; alluding to the pretty dancing spikelets). Love Grass. ORD. *Gramineæ*. A genus of about 100 species of annual or perennial grasses (of which two or three are almost cosmopolitan), found in all warm and temperate regions. Some make decidedly pretty garden plants; and are easily grown from seeds, sown in the open, in spring. The best are: *ægyptiaca*, *capillaris*, *elegans*, and *megastachya*.

ERANTHEMUM (from *eran*, to love, and *anthemon*, a flower; referring to the beauty of the flowers). ORD. *Acanthaceæ*. A genus containing about thirty species of handsome stove plants, of elegant and free-flowering habit. They are found in the warmer regions of both hemispheres. Propagated by cuttings, which may be inserted at any time from March to June. Being soft-wooded subjects, the young shoots root readily in peaty soil, if placed in a close frame, or under a bell glass, where there is a bottom heat of 70deg. When rooted, the plants should be potted off singly in 3in. pots, in a compost of equal parts leaf mould, peat, and loam, with the addition of a little sand. If again placed in bottom heat, the plants root and grow rapidly. As they advance in size, they should be potted on, and stood near the glass, supplying an abundance of water

Eranthemum—*continued.*

in warm weather. This induces a stubby growth, which favours free-flowering. A side shelf in the plant stove, near the light, or a raised bed in the same structure, are good positions for bringing Eranthemums into flower. The plants may be cut back after blossoming, and kept somewhat dry for a time; they should then be potted into larger sizes for another season. Some species are cultivated chiefly for their handsome variegated foliage, and others for their floral beauty. *E. atropurpureum* is a fine species, with dark coloured foliage; and *E. pulchellum* has beautiful blue flowers, that are produced in winter and early spring.

E. albo-marginatum (white-margined).* *l.* oblong-elliptic, 4in. to 6in. long, 2in. to 3in. broad, broadly margined with white, and irregularly suffused with grey. Polynesia, 1880.

E. Andersoni (Anderson's). *fl.* numerously disposed in long terminal leafless cymulose spikes or panicles; corolla with the two upper and lateral lobes pure white, and the lower segments very thickly dotted with crimson-lake and broadly margined with white. November. *l.* ovate-oblong. India, 1868. (B. M. 5771.)

E. aspersum (sprinkled).* *fl.* white, spotted with purple, produced freely in short axillary clusters; lower larger lobe rich deep purple. March. *l.* ovate-oblong, 2in. long, dark green, veined at the margins. Solomon Isles, 1867. A handsome slender-growing species. (B. M. 5711.)

E. atropurpureum (dark purple).* *l.* and stems dark lurid purple. Polynesia, 1875.

E. cinnabarinum (cinnabar).* *fl.* reddish-pink, disposed in loose panicles from the ends of the branches. *l.* ovate-lanceolate, acuminate, deep green. Martaban, 1880. A very handsome species. (R. G. 916.) There is a pretty variety (*ocellatum*) of this, having crimson flowers with a white eye (B. M. 5921).

E. Cooperi (Cooper's). *fl.* white, handsomely spotted with lines of small purple dots, axillary. June. *l.* 3in. long, 5in. wide, narrow-lanceolate, dark green; margins deeply cut. New Caledonia, 1864. A handsome sub-shrubby plant. (B. M. 5467.)

E. crenulatum grandiflorum (large-flowered scolloped). *fl.* pinkish-lilac; racemes terminal, aggregated; corolla funnel-shaped, with a very slender, almost filiform, white tube, dilated at the throat; pedicels very short, small, approximate or remote, subtended by one or two small bracts. *l.* rather long-petioled ovate, sometimes cordate at the base, or lanceolate, acuminate, penniveined, generally quite entire at the margin. *h.* 1ft. to 2ft. Moulmein, 1864. A moderate-sized glabrous shrub.

E. eldorado (El Dorado). *l.* yellow, mottled and veined with green. Polynesia, 1877.

E. laxiflorum (loose-flowered). *fl.* purplish, disposed in terminal panicles. *l.* ovate-oblong, tapering at both ends. *h.* 2ft. to 4ft. Polynesia, 1877. (B. M. 6336.)

E. Moorei (Moore's). *l.* with a dull sap-green centre, which gradually softens off to a bright canary-yellow. It is very curious and distinct. Polynesia.

E. pulchellum (pretty).* *fl.* of a rich bright blue, very freely produced. April. *l.* petiolate, broadly ovate, dark green; surface somewhat wrinkled. *h.* 2ft. East India, 1796. One of the prettiest of the genus for winter decoration. (A. B. R. ii. 88.)

E. reticulatum (reticulated).* *l.* ovate-lanceolate, green, with a network of gold. Polynesia, 1875. SYN. *E. Schomburgkii*. (I. H. n. s. 349.)

E. Schomburgkii (Schomburgk's). A synonym of *E. reticulatum*.

E. tricolor (three-coloured). *l.* opposite or ternate, oblong-ovate, olive-green, blotched irregularly with greyish-purple and salmony-pink; tints more or less varied. Polynesia, 1876.

E. tuberculatum (tuberculated).* *fl.* pure white, nearly 1½in. across. *l.* dense, small, oval. New Caledonia, 1863. An elegant species, branching freely into slender twigs, tuberculated. (B. M. 5405.)

E. variabile (variable). *l.* lanceolate, with an irregular outline, 3in. to 4in. long, 1in. broad, variegated with different tints of bronzy-green, intermixed with creamy-white, crimson, and rosy-pink. 1879. A slender-growing plant, varying considerably in colour and habit. (L. & P. M. G. xiii. 75.)

ERANTHIS (from *er*, spring, and *anthos*, a flower; flowers produced early in the year). Winter Aconite. ORD. *Ranunculaceæ*. A genus of a couple of species of pretty little hardy tuberous-rooted perennials. Flowers yellow, solitary; sepals narrow. Leaves divided. These plants, from their very early flowering habit, are extensively grown for naturalising in shrubby or woody situations, for which they are well adapted. Increased by division.

E. hyemalis (winter).* *fl.* yellow, sessile; sepals six to eight, oblong, petal-like; petals six to eight, very short, tubular.

Eranthis—*continued.*

January to March. *l.* deeply divided; involucre of three deeply-cut leaves. *h.* 3in. to 8in. Western Europe, 1596. See Fig. 717. (Sy. En. B. 43.)

FIG. 717. ERANTHIS HYEMALIS.

E. sibiricus (Siberian).* *fl.* yellow; sepals five, oval, petal-like. March and April. *h.* 3in. Siberia, 1826.

ERCILLA (said to be the native Peruvian name). ORD. *Phytolaccaceæ.* A hardy evergreen creeper, with stalked, alternate, entire, sub-coriaceous leaves, adhering to walls, &c., like Ivy.

E. spicata (spicate).* *fl.* purplish, in dense sessile racemes. *l.* roundish-ovate. Chili, 1840. An excellent plant for covering walls. (G. C. n. s., ix., p. 653.)

EREMIA (from *eremos*, solitary; in reference to the seeds being solitary in the cells). ORD. *Ericaceæ.* A genus of about ten species of diffusely-branched, Heath-like, greenhouse evergreen shrubs, natives of South Africa. For cultivation, *see* **Erica.**

E. Totta (Hottentot). *fl.* red, glomerate; corolla urceolar, with a small four-lobed limb. June. *l.* spreading, hispid from bristles. *h.* 2ft. 1810.

EREMOSTACHYS (from *eremos*, deserted, and *stachys*, a spike; alluding to the flowers growing in sparse verticillate spikes). ORD. *Labiatæ.* Very pretty hardy perennials. All are natives of Western and Central Asia. Upper lip of corolla elongated, galeate, somewhat compressed, attenuated at the base. Leaves pinnate or pinnatifid. They are of very easy culture in a light rich soil, and may be increased by division or seed. There are about twenty-seven species in this genus, but that given below is perhaps the only one in cultivation.

E. laciniata (cut-leaved). *fl.* yellow; whorls ten to twenty-flowered, upper ones approximate. July. *l.* pinnatisect; segments oblong-lanceolate or linear, deeply pinnatifid; radical ones 6in. long. Stems nearly simple. *h.* 1ft. to 1½ft. Levant, 1731. (B. R. 1845, 52.)

EREMURUS (from *eremos*, solitary, and *oura*, a tail; referring to the flower-spike). ORD. *Liliaceæ.* A genus of about eighteen species of very pretty, hardy herbaceous, large, Hyacinth-like perennials, extending from Asiatic Russia to Hindostan. Scape naked, terminating in an elongated raceme of yellow or white flowers; perianth segments narrow, spreading. Leaves radical, linear. They are of easy culture, in moderately good garden soil. Increased by divisions.

E. himalaicus (Himalayan).* *fl.* white, star-shaped; scape 1½ft. to 2ft. in height, bearing a densely packed raceme. *l.* strap-shaped, acute, glabrous, entire, about 1ft. in length. Himalaya, 1881. (G. C. n. s., xvi. 49.)

E. Korolkowi (Korolkow's) is a rare and handsome species, from Central Asia, growing from 3ft. to 4ft. high, and bearing immense spikes of bright rose flowers.

E. Olgæ (Olga's). *fl.* white, star-shaped, with projecting stamens; disposed in a long dense raceme. Summer. *l.* tufted, linear, scabrous, recurved. Turkestan, 1881. (R. G. 1048.)

E. robustus (robust).* *fl.* peach-coloured, disposed in an elongated raceme on a naked scape, from 8ft. to 9ft. in height. *l.* rosette-formed, 4in. wide, and from 2½ft. to 3ft. long. Turkestan, 1874. (B. M. 6726; R. G. 769.)

E. spectabilis (showy).* *fl.* sulphur-coloured; raceme elongated, sub-cylindrical, many-flowered; perianth divided to the very base, with six ovate-elliptical, spreading, sulphur-coloured sepals, slightly tinged with orange; anthers oblong, deep orange. June. *l.* radical, linear-ligulate, glaucous-green, slightly channelled and obscurely keeled, sheathing at base. *h.* 2ft. Siberia, 1800. (B. M. 4870.)

Eremurus—*continued.*

E. turkestanicus (Turkestan). *fl.* reddish-brown; perianth segments margined with white; stamens much exserted; raceme very long and dense, borne on a tall scape. *l.* broad-linear, acuminate. *h.* 4ft. Turkestan, 1881. (R. G. 997.)

ERIA (from *erion*, wool; the leaves of some of the species are downy). SYN. *Pinalia.* Including *Porpax* (of Lindley). ORD. *Orchideæ.* A genus of about 120 species of stove epiphytal orchids, natives of India, South China, and the Malay Archipelago. They are allied to *Stanhopea.* Flowers solitary or racemose, lateral or apparently terminal on the leafy stems or pseudo-bulbs; column short, produced at the base in a foot. Leaves variable. Few of the species are grown, being generally more curious than pretty. For culture, *see* **Stanhopea.**

E. clavicaulis (club-stemmed). *fl.* white; lip bordered with pink. India, 1837.

E. convallarioides (Convallaria-like). *fl.* white, small; racemes dense, oblong, drooping, on short peduncles. August. *l.* oblong-lanceolate. Stems compressed, densely and loosely sheathed. India, Nepaul, 1839. (B. R. 1841, 62.) B. R. Vol X 1847 T. 63

E. extinctoria (extinguisher-spurred). *fl.* solitary, ⅛in. to ⅜in. long; posterior sepal ovate, acute, white, or tinged with rose; lateral sepals obliquely ovate, acute, equalling the posterior sepal, produced below and adnate to the column, forming an extinguisher-like, obtuse or retuse, slightly curved, greenish-tipped spur; lateral petals oblong or oblanceolate, nearly equalling the sepals, white or faint blush; labellum narrowed below into a distinct claw, with three sub-prominent, papillose, longitudinal ridges, more or less orange below, and on the median line, transversely blotched with rose-purple above. Birma, 1871. A very remarkable leafless species. (B. M. 5910.)

E. floribunda (bundle-flowered). *fl.* white, or tinged with red, small, but very numerous, in pendulous racemes, not unfrequently 8in. to 10in. long. Summer. *l.* lanceolate-acuminate. Stems fleshy, rather flexuous, terete. Singapore, Borneo, 1842. (B. R. 1844, 20.)

E. myristicæformis (Nutmeg-bulbed). *fl.* white, medium size, sweet-scented; racemes erect, shorter than the leaves; bracts about as long as the pedicel, oblong, acuminate, white, reflexed; labellum forming a spur at its union with the produced base of the column, three-lobed; disk bearing two orange-coloured glands. September. *l.* two, lanceolate-spathulate. Pseudo-bulbs aggregated, oblong, green; the old bulbs remain, and partake much of the shape of nutmegs (whence the specific name). Moulmein, 1863. (B. M. 5415.)

E. obesa (fat). *fl.* white, scarcely tinged with pale pink, very much resembling those of *Dendrobium*; racemes arising from the leafless pseudo-bulbs, 3in. to 4in. long; labellum oblong, obscurely three-lobed. February. *l.* two, terminal. Pseudo-bulbs oblong-oval, tapering at each end, 2in. to 3in. long and 1in. broad in the thickest part. Malayan Peninsula, 1863. (B. M. 5391.)

E. stellata (star-bearing). *fl.* yellowish-red, stellate, in a long curved raceme, 1ft. to 1¼ft. long, fragrant; perianth pale yellow-green; sepals and petals nearly equal, linear-lanceolate, spreading; lip lanceolate, three-lobed, almost parallel with the column. April. *l.* two, broadly-lanceolate, marked with five longitudinal ribs. *h.* 2ft. Java (?), 1837. A very desirable plant. (B. M. 3605.)

E. vestita (clothed). *fl.* reddish-brown without, white within, medium size; racemes long, pendulous, flexuous. *l.* coriaceous, lanceolate. Indian Archipelago, 1869. SYN. *Dendrobium vestitum.* (B. M. 5807.)

ERIANTHUS (from *erion*, wool, and *anthos*, a flower; referring to the tuft of hairs at the base of each spikelet). SYN. *Pipidium.* ORD. *Gramineæ.* This genus comprises about a dozen species of hardy and half-hardy grasses, found in most warm regions.

E. Ravennæ (Ravenna)* is a very handsome and stately hardy grass, from South Europe. Its foliage forms dense tufts in a light soil; the flowering stems sometimes attain a height of from 5ft. to 6½ft., but these are only produced in very warm summers. It is an excellent plant for the sub-tropical garden.

ERICA (*Erica*, of Pliny, is altered from *Ereike* of Theophrastus; there is probably no ground for the ordinary derivation from *erico*, or *ereiko*, to break). Heath. ORD. *Ericaceæ.* A very extensive genus (about 400 species) of greenhouse or hardy evergreen, branching, wiry shrubs, natives, for the most part, of the Cape of Good Hope. Flowers usually nodding, axillary or terminal, fascicled or racemose; pedicels two to three-bracteate; corolla persistent, with a four-lobed limb; stamens eight. Leaves opposite,

Erica—*continued.*

alternate or verticillate, rigid, small. Cape Ericas are among the most beautiful of decorative cool-house plants. A great diversity in colour and form of flower, marks the genus as now represented in gardens. The type of form of corolla in a large number of species is shown at Fig. 718. Probably no class of plants require more

FIG. 718. URCEOLATE COROLLA OF ERICA.

careful attention for their successful cultivation, than do the majority of the species of the hardest-wooded Heaths. Many of these are not now in cultivation, their places being filled by numerous kinds of hybrid origin. Some of the softer-wooded kinds, such as *caffra*, *colorans*, *gracilis* (with its variety *autumnalis*), *hybrida*, *hyemalis*, *melanthera*, *persoluta* (var. *alba*), *ventricosa coccinea minor* and *Wilmoreana*, are grown in immense quantities to supply the ever-increasing demand for useful decorative plants such as these Heaths invariably make. They flower principally in autumn and winter, although the majority of the species blossom during spring and early summer. Ericas, especially the harder-wooded sorts, are liable to die suddenly from some often unknown cause, though careless potting or watering very frequently proves fatal to them.

Many of the hardy species are very attractive and useful for culture in peaty soil, as an edging to other shrubs, particularly the dwarf *E. carnea*, or even *E. vagans*. The other taller-growing species are showy when planted in beds by themselves, or with a dwarf one as an edging. They may be increased by division or layers, or by cuttings, placed in sandy peat, under handlights, in autumn.

PROPAGATION. Heaths may be readily grown from seed, a method which is, however, now seldom resorted to except for the raising of new varieties, the most commonly practised means for their propagation being that of cuttings. These are obtained from the points of the twiggy ripened shoots about the lower parts of the plants. The soft-wooded varieties, which commence to make new growth early in the year, will be found to yield good cuttings before the others, that are later in flowering, and consequently do not start growing again quite so early as the softer kinds. The cuttings should be about 1in. long, and, after the lower leaves have been carefully removed, be inserted rather closely in pots, which should be filled with two-thirds of crocks, the remainder being fine sandy peat with a layer of clean silver sand on the surface, and covered with a bell glass, or placed in a close-fitting handlight. After being once well watered, they should be placed in a temperature of about 60deg. The glasses will require to be rather frequently wiped dry inside, and any appearance of mould or damp on the cuttings must be sought for, and immediately removed. When growth commences, air should be very gradually admitted, and the young plants exposed to more light. They may be stopped, and remain in these pots until early the following spring, when they should be potted singly, and grown on. The same remarks apply to all greenhouse Heaths; the hardest-wooded ones are inserted later in the season, and are the most difficult to increase.

CULTIVATION. The soil used for potting Ericas, at any stage, must be good fibrous peat, broken in small lumps, with nearly one-third of clean silver sand added. Thorough drainage is at all times essential; and, to keep the compost open, the admixture of a few pieces of crock, broken fine, is advisable. The plants should never be allowed to become pot-bound, especially when young. The roots

Erica—*continued.*

are seldom altogether inactive; and the best season for repotting any that require it is as soon as new growth commences in spring, or, with established late-flowering sorts, early autumn. The balls should not be disturbed, excepting what becomes absolutely necessary in removing the crocks; and the new soil should be rammed as firmly as the old, to prevent water passing more freely through one part than another. It is also very important that the ball should not be placed low enough to allow the stem of the plant to be buried. This condition alone, when neglected, is liable to cause the death of any number of Ericas. Anything approaching a close atmosphere must, at all times, be avoided, as this encourages the development of mildew on the leaves. When the plants are established in the summer months, a cold frame is the best place, and too much light and air cannot be given. Indeed, in dry open weather, the sashes are better removed. With the hard-wooded sorts, care must be taken to prevent water lodging amongst the leaves, or damping will result. The pots should be plunged in summer, to prevent injury to the tender roots. Exposure of established plants to sun and air, from the latter part of July till the end of September, tends greatly to ripen and solidify the growths, thus causing the greater production of flowers. For wintering Ericas, a span-roofed house, with plenty of light and available means of ventilation, is most suitable. They dislike fire heat, and it should never be applied, except to keep out frost, or occasionally to expel damp. A temperature of 40deg. in severe weather will be more suitable than one higher; and when it is mild, plenty of air should be admitted.

Watering is a matter of great importance at all seasons, perhaps more so than with any other class of plants. If possible, soft rain water should always be used, or some that has been exposed to sun and air in an open cistern. The plants must never be allowed to become dry; and, on the other hand, too much water, especially with individuals in bad health, is equally injurious. They should be examined each time, and watered according as experience alone can teach. The use of hard water, which invariably contains lime, often proves destructive, and should be avoided if possible. Where none but hard water is available, it may be made more suitable for Heaths by placing a bag of soot in the tank or tub, where it is kept.

The best time for pruning is as soon as the flowering season is over. The softer-wooded and freer-growing kinds should have all their strongest shoots shortened back to within an inch or two of their bases, and all the weaker ones should have their tips removed. In some cases, it will only be necessary to shorten a few of the strongest ones to induce a symmetrical habit. Some of the slow-growing sorts rarely require pruning at all. Heaths are seldom subject to attacks from insect pests—mildew being the disease to which they are most liable. This may be destroyed by dusting the affected part with flowers of sulphur, previously moistening the plant. It may be allowed to remain on the plant for several days, and be then washed off with clean water, taking care not to allow any sulphur to get in the soil.

In addition to the following enumeration, it may be stated that the number of hybrids and varieties now in cultivation is very considerable, and limited space deters us from describing more of them. Indoor treatment is required except where otherwise stated.

E. Aitonia (Aiton's).* *fl.* pale red, or nearly white, terminal, three to four together; corolla viscid, with a cylindrical tube 1in. long, which is ventricose at top, with large ovate segments. June to September. *l.* three in a whorl, linear, serrulated, erect. *h.* 2ft. 1790. A slender branching species. SYN. *E. Aitoniana*. See Fig. 719. (B. M. 429.)

E. A. superba (superb). An improved form of the type, with larger tubes, and a more compact habit of growth.

E. A. turgida (turgid). *fl.* in terminal umbels; tubes swollen at

Erica—*continued.*

the base, and contracted above the middle, enlarging slightly at the mouth.

E. A. Turnbullii (Turnbull's). *fl.* in umbels of about six; tube upwards of 1in. long, as thick again as those of the type; corolla lobes large, spreading, white, changing to pink. *l.* broader than in the type.

FIG. 719. ERICA AITONIA, showing Flowering Branch and detached Single Flower.

E. Aitoniana (Aiton's). A synonym of *E. Aitonia.*

E. alopecuroides (fox-tail-like). *fl.* terminal; corolla purplish-red, ovate, small; calyx coloured, ciliated. September and October. *l.* linear, three in a whorl. *h.* 1ft. 1810. (L. B. C. 874.)

E. ampullacea (flask-shaped).* *fl.* red, terminal, usually in fours; corolla nearly 1in. long, viscid, with a ventricose tube, ribbed neck, and ovate-cordate, slightly crenulated, obtuse segments. July. *l.* three or four in a whorl, lanceolate, reflexed, imbricate at the base. *h.* 2ft. 1790. (B. M. 303.)

E. andromedæflora (Andromeda-flowered).* *fl.* deep red, or reddish-purple, solitary, drooping, axillary; corolla urceolate; calyx pink, nearly as long as the corolla. March to June. *l.* three in a whorl, ciliated, subulate, stiff, spreading. *h.* 1ft. to 3ft. 1803. (B. M. 1250.)

E. arborea (tree-like). *fl.* white, axillary, racemose, small; corolla two lines long, campanulate. February to May. *l.* three or four in a whorl, linear, glabrous. Branches tomentose. *h.* 10ft. to 20ft. South Europe, 1658. Hardy. (S. F. G. 351.) There are several varieties of this species.

E. Archeriana (Lady Archer's). *fl.* about 1in. long, axillary and terminal, crowded, verticillate; corolla deep reddish-purple or scarlet, downy, viscid, with a cylindrical, inflated tube. August and September. *l.* six to seven in a whorl, serrulately ciliated, spreading. 1786. (L. B. C. 1466.)

E. aristata (awned). *fl.* terminal; corolla reddish-purple, with a paler limb, salver-shaped, inflated upwards with revolute projecting segments. March to August. *l.* four to five in a whorl, oblong, sub-secund, hispid, imbricated, awned at the apex. *h.* 1ft. to 2ft. 1801. (B. M. 1249.)

E. a. Barnesii (Barnes').* *fl.* produced in terminal whorls; corolla tube shining red; mouth deeper red than in type; segments very broad, pure white. A very handsome hybrid.

E. a. virens (green) is closely allied to the last, but has four leaves in a whorl, not five, and the clusters of flowers are larger.

E. Austiniana (Austin's).* *fl.* in whorls; corolla tubular; tubes white, streaked and suffused with carmine, narrow, 1in. or more in length. July and August. *l.* ovate-lanceolate, smooth, spreading. An excellent species.

E. australis (Southern). *fl.* terminal, small; corolla purplish-

Erica—*continued.*

red, three lines long, with a curved, funnel-shaped tube, and a recurved limb; anthers crested. March to July. *l.* four in a whorl, scabrous, spreading, mucronate. *h.* 3ft. to 6ft. Spain, 1769. Hardy. (L. B. C. 1472.)

E. Banksiana (Banks'). *fl.* terminal; corolla greenish-yellow, cylindrical, with a reflexed limb; anthers brown. February. *l.* mucronate, loosely imbricated, three or four in a whorl. *h.* 9in. 1787. (A. H. iii. 105.)

E. Beaumontiana (Beaumont's).* *fl.* axillary and terminal, drooping; corolla white, tinged with purple, campanulate; style a little exserted. June. *l.* linear, five to six in a whorl. *h.* 1ft. 1820. (A. H. vi. 253.)

E. Bergiana (Bergius').* *fl.* terminal, drooping; corolla purple, campanulate, smooth; calyx reflexed, ciliated. May and June. *l.* linear-oblong, pubescent, spreading. Peduncles hairy, with a few scaly bracts. *h.* 1½ft. 1787. (L. B. C. 939.)

E. blanda (charming). *fl.* terminal, clustered; corolla pale red, one and one-third lines long, having the limb one-half longer than the tube, with semi-orbicular segments. May. *l.* three in a whorl, spreading, short, obtuse. *h.* 2ft. 1798. (A. H. iii. 152.)

E. Bonplandiana (Bonpland's). *fl.* terminating the small branches, solitary or by threes, sessile; corolla white, large, with an urceolar tube, and an acute, spreading limb. March to September. *l.* four in a whorl, imbricate, acerose. *h.* 1ft. 1812. (B. M. 2126.)

E. Bowieana (Bowie's).* *fl.* crowded, axillary, verticillate, near the tops of the branches, pendulous; corolla cylindrical, with an inflated tube and contracted mouth. October. *l.* linear, glaucous, glabrous. *h.* 1ft. 1822. (L. B. C. 842.)

E. bruniades (Brunia-like). *fl.* in small pendulous umbels; corolla pink; stamens black; calyx covered with long white woolly hairs. May. *l.* short, linear-oblong, clothed with white woolly hairs, as are also the branches. *h.* 1½ft. 1774. (A. H. i. 6.)

E. caffra (Caffrarian).* *fl.* sweet-scented; corolla globular, very small, produced in great profusion. *h.* 1½ft. 1802. (A. H. i. 7.)

E. campanulata (bell-shaped). *fl.* terminal, solitary, drooping; corolla yellow, two and a-half lines long, campanulate. April to August. *l.* three in a whorl, subulate, glabrous. *h.* 1ft. 1791. (A. H. ii. 55.)

E. Candolleana (Candolle's).* *fl.* umbellate; corolla rosy-red at the base, white towards the apex, more than 1in. long. June, July. *l.* erect, somewhat oblong, clothed with long hairs at the edges. Hybrid.

E. carnea (flesh-coloured).* *fl.* pale red, axillary, drooping, disposed in secund racemes; corolla conical, two and a-half lines

FIG. 720. ERICA CERINTHOIDES, showing Flowering Branch and detached Single Flower.

Erica—*continued.*

long, with a pyramidal tube. January to April. *l.* three to four in a whorl, linear, glabrous. *h.* 6in. Germany, 1763. Hardy. The white-flowered form is generally called *E. herbacea*. (L. B. C. 1452.)

E. Cavendishiana (Cavendish's).* *fl.* rich bright yellow, tubular, nearly 1in. long, stout. May to July. *l.* subulate, slightly spreading, bright dark green. *h.* 1½ft. Hybrid. (P. M. B. xiii. 3.)

E. cerinthoides (Honeywort-like).* *fl.* terminal, capitate, drooping; corolla scarlet, nearly 1in. long, oblong, with an inflated tube, clothed with viscid hairs outside. May to November. *l.* five to six in a whorl, linear-lanceolate, pilose and ciliated, bearded at the apex. *h.* 3ft. 1774. There are several garden forms of this species. See Fig. 720. (B. M. 220.)

E. Chamissonis (Chamisso's).* *fl.* rose-coloured, at the tips of short side branches, solitary, or three or four together, pendulous; pedicel pink, ¼in. long; corolla between globose and campanulate; lobes very short and broad. April. *l.* long, ternate, spreading, and incurved, sessile, linear, obtuse, grooved underneath from the recurvation of the margin. Branches slender, leafy, erect. *h.* 1½ft. South Africa, 1874. An elegant plant. (B. M. 6108.)

E. ciliaris (fringed).* *fl.* terminal, sub-racemose, secund; corolla pale red, four lines long, smooth, ovate, more ventricose on the upper side. August, September. *l.* three in a whorl, ovate, glandularly ciliated, spreading, rather remote. *h.* 1ft. Western Europe (Cornwall and Dorset). (B. M. 484; Sy. En. B. 887.)

E. cinerea (ashy-grey). *fl.* verticillate, on the naked stems; corolla purple, changing to blue as it fades, three lines long, ovate-urceolate. August, September. *l.* three in a whorl. *h.* 6in. to 12in. Europe (Britain). (Sy. En. B. 891.) There are several varieties, including a white-flowered one, of this species.

E. codonodes (bell-bearing). *fl.* white and pink, small, disposed in numerous densely-crowded racemes. *l.* acerose, three to five in a whorl. *h.* 8ft. South Europe. A slender much-branched hardy shrub, closely allied to *E. arborea*, of which it is probably only a variety. (G. C. n. s., vii. 463.)

E. colorans (colouring).* *fl.* crowded, terminating the small branches; corolla varying from red to white, cylindrical, clavate, glabrous. April to June. *l.* linear, spreading, ciliated. *h.* 2ft. 1817. (B. R. 601.) A garden variety, named *superba*, with rosy-red and white flowers, is said to be an improvement on the typical species.

E. comosa (tufted). *fl.* small, terminal, tufted; corolla white, with an ovate ventricose tube, and dark anthers. April to August. *l.* four in a whorl, linear, short, erectly spreading. *h.* 9in. 1787. (A. H. i. 10.)

E. cylindrica (cylindrical). A synonym of *E. hybrida*.

E. delecta choice). A synonym of *E. primuloides*.

E. densa (dense). *fl.* axillary, crowded, nearly sessile; corolla pale red, with an oblong-cylindrical tube, and a short spreading limb. May to October. *l.* four or five in a whorl, linear, somewhat imbricated, spreading. *h.* 1½ft. 1810. (A. H. v. 212.)

E. denticulata (denticulate). *fl.* terminal, fastigiate; corolla purple, three lines long, with a cylindrical tube. April, May. *l.* four in a whorl, linear, glabrous. *h.* 1ft. 1821. (L. B. C. 1090.)

E. depressa (depressed). *fl.* small, terminal; corolla white, bell-shaped. July. *l.* glabrous, three in a whorl, linear, revolute. Branches decumbent. 1789. (A. H. i. 17.)

E. Devoniana (Devon).* *fl.* umbellate; corolla rich purple, tubular, inflated at the base, about 1in. long. Summer. *l.* broad, bluntly-oblong, recurved, ciliated. Hybrid.

E. Douglasii (Douglas's). *fl.* umbellate; corolla flesh-colour, about 1in. long, with large spreading white segments. June, July. *l.* short, blunt, spreading, awned. Hybrid.

E. echiiflora (Echium-flowered).* *fl.* axillary, horizontal and spicate; corolla deep red, with a short, inflated, ribbed tube, clammy. March to May. *l.* five to seven in a whorl, linear, downy, with rough margins, spreading. *h.* 1½ft. 1798. (A. H. iv. 161.)

E. effusa (effuse). *fl.* ten to twelve in a large terminal whorl; corolla bright scarlet-crimson, tubular; segments reflexed, pale yellow. August. *l.* spreading, ciliated. Hybrid.

E. elegans (elegant).* *fl.* terminal, numerous, capitate; corolla pink, tipped with green, urceolate, with a contracted four-toothed mouth; calyx bright rosy-red, nearly as large as the corolla. Summer. *l.* three in a whorl, linear, glaucous, spreading. *h.* 6in. to 12in. 1799. (B. M. 962.) The variety *glauca* has larger flowers, and more erect glaucous leaves, than the type.

E. empetrifolia (Empetrum-leaved). *fl.* purplish-red, disposed in glomerate racemose whorls; corolla two lines long, hairy, with an urceolar tube and a recurvedly-spreading limb. May and June. *l.* six or seven in a whorl, oblong-linear, ciliated, erect. 1774. (B. M. 447.)

E. Eweriana (Ewer's). *fl.* sub-spicate; corolla dark red, with a greenish yellow mouth, cylindrical, eight to ten lines long, clothed with viscid down, curved and clavate. July to November. *l.* linear, scabrous, spreading. *h.* 2ft. 1790. (L. B. C. 1303.)

E. eximia (choice).* *fl.* produced in whorls; corolla scarlet, tipped with green, tubular, about 1in. long. May and June. *l.* linear, slightly spreading, hairy. *h.* 2ft. 1800. (L. B. C. 1105.)

Erica—*continued.*

E. exsurgens (rising). *fl.* axillary, verticillate, horizontal, crowded; corolla orange-red, cylindrically clavate, thirteen to fifteen lines long, viscid, with ovate-cuneated segments. March to October. *l.* filiform, spreadingly recurved. *h.* 1½ft. 1792. (A. H. i. 20, 21.)

FIG. 721. FLOWERING BRANCH OF ERICA FAIRIEANA.

E. Fairieana (Fairie's).* *fl.* in terminal whorls; corolla tube rich rose, 1in. long, much inflated at the base, suddenly contracted at top; limb white. June to August. *l.* large, oblong-lanceolate, with long white hairs at the edges. Hybrid. See Fig. 721. (R. H. 1880, 467.)

E. fastigiata (fastigiate). *fl.* terminal, crowded, sessile; corolla white, salver-shaped, with a narrow tube. May to September. *l.* four in a whorl, acerose, shining, erect, imbricated. *h.* 1½ft. 1797. (A. H. ii. 62.)

E. ferruginea (rusty-coloured). *fl.* terminal, umbellately verticillate, horizontal; corolla with red, acuminated, inflated tube, and a greenish-yellow limb. May. *l.* four in a whorl, linear, secund, ciliated with rusty hairs. *h.* 1ft. 1798. (A. H. iv. 162.)

E. florida (florid). *fl.* terminal, umbellate, glabrous; corolla two lines long, urceolate. June, July. *l.* linear, pilose. *h.* 1ft. 1803. (L. B. C. 234.)

E. gemmifera (bud-bearing). *fl.* drooping, crowded, disposed in a verticillate crown; corolla orange-red, with a green apex, villous, cylindrical, inflated. July, August. *l.* oblong, adpressed, ciliated, aristate, four to five in a whorl. Branches thickened at top. *h.* 1ft. 1802. (B. M. 2266.)

E. gracilis (slender).* *fl.* small, terminal, spicate; corolla purplish-red, ovate-globose, or urceolate. September to December. *l.* glabrous, four in a whorl, linear. *h.* 1ft. 1774. (A. H. ii. 68.)

E. g. vernalis (spring).* *fl.* terminal; corolla purplish-red, campanulate. March, April. *l.* glabrous, acerose, three in a whorl. *h.* 2ft. to 3ft. 1827. (L. B. C. 1608.)

E. grandiflora (large-flowered).* *fl.* axillary near the tops of the branches and stem, verticillate; corolla bright glossy yellow, 1in. long, curved, trumpet-shaped, viscid, with a revolute limb. June, July. *l.* linear, bluntish, glabrous, reclinate, four to six in a whorl. *h.* 3ft. 1785. See Fig. 722. (A. H. iii. 117; B. M. 189.)

E. grandinosa (hail-stone). *fl.* terminal, drooping, by threes; corolla white, irregularly ovate, inflated, small. April, May. *l.* linear, three in a whorl. *h.* 6in. to 12in. 1810. (A. H. vi. 265.)

E. Hartnelli (Hartnell's). *fl.* large, terminal; corolla purple, viscid, nearly tubular, rather ventricose at the base, with ovate-triangular lobes. May. *l.* four in a whorl, lanceolate, imbricated, finely ciliated. *h.* 2ft. 1820.

E. herbacea (herbaceous). A synonym of *E. carnea*, in gardens generally applied only to the white-flowered variety of that species.

E. hybrida (hybrid).* *fl.* disposed in long, dense, spikes; corolla

Erica—*continued.*

FIG. 722. ERICA GRANDIFLORA, showing Flowering Branch and detached Single Flower.

bright red, 1in. long. May, June. *l.* long, linear. Hybrid. SYN. *E. cylindrica.* See Fig. 723.

E. hyemalis (winter).* *fl.* disposed in long, dense, leafy spikes, 10in. to 12in. in length; corolla rosy-pink at the base, white towards the apex, campanulate. Winter, spring. *l.* linear, acuminated, hairy. *h.* 2ft. Hybrid.

E. inflata (inflated). *fl.* in terminal umbellate fascicles; corolla reddish-purple at the base, and green at the apex, large, with an elongated, ovate, ventricose tube, and a short limb. May to September. *l.* four in a whorl, linear, glabrous. *h.* 1ft. to 2ft. 1800.

E. infundibuliformis (funnel-shaped). *fl.* terminal, aggregate; corolla pale red, salver-shaped, with a slender tube and large segments. August to November. *l.* four in a whorl, filiform, obtuse, erect, glabrous. *h.* 2ft. 1802. (A. H. v. 218.)

E. Irbyana (Irby's).* *fl.* terminal, umbellate; corolla white, tinged with red, more than 1in. long, viscid, with a cylindrical ventricose tube, and large segments. June and July. *l.* three in a whorl, cuspidate, with scabrous margins, erect. *h.* 1ft. to 2ft. 1800. (A. H. v. 219.)

E. jasminiflora (Jasmine-flowered).* *fl.* terminal, aggregate; corolla about 1in. long, salver-shaped, viscid, with a reddish ovate tube, which is ventricose at the apex. June to November. *l.* three in a whorl, linear-oblong, serrulated, recurved, imbricated in six rows. *h.* 1ft. to 2ft. 1794. The variety *alba* has pure white flowers.

E. jubata (maned). *fl.*, pedicels terminal, corymbose, hispid; corolla campanulately rotate. June to October. *l.* linear, filiform, rather clammy, incurvedly spreading. *h.* 2ft. 1800.

E. Lambertiana (Lambert's).* *fl.* large, terminal, sub-corymbose, drooping; corolla white, glabrous, ovate-globose. May to July. *l.* three in a whorl, linear, glabrous, spreading. *h.* 1ft. to 2ft. 1800. (A. H. iv. 171.)

E. Linnæana (Linnæan).* *fl.* axillary, numerous, nearly sessile, horizontal; corolla white, with a red base, clavate, downy or villous. January to May. *l.* ciliated, spreading, acerose. *h.* 1½ft. 1790. (A. H. ii. 75.) The variety *superba* is a very handsome form, with large erect white flowers, tinged with red.

E. lutea (yellow). *fl.* nearly terminal; corolla yellow, two and a-half lines long, ovate, ventricose. September to May. *l.* opposite, linear, imbricate, glabrous. Branches flexuous. *h.* 1ft. 1774. (A. H. i. 29.)

E. mammosa (nippled). *fl.* drooping, axillary, crowded, verticillate, near the tops of the branches; corolla reddish-purple,

Erica—*continued.*

downy, eight to ten lines long, with a cylindrical inflated tube. July to October. *l.* linear, subulate, glabrous, erect, spreading. *h.* 2ft. 1769. (A. H. iii. 124.)

E. Marnockiana (Marnock's).* *fl.* glossy rich purple, tubular, inflated at the base, and narrow at the neck, with a small spreading limb; tube smooth. July, August. *l.* oblong, spreading, ciliated, awned. Hybrid.

E. Massonii (Masson's).* *fl.* axillary, crowded, drooping, disposed in a verticillate crown; corolla about 1in. long, viscid, swollen at top, with a scarlet tube and a greenish-yellow constricted mouth. July to October. *l.* four to five in a whorl, linear, serrulated, hairy, imbricated, spreading. *h.* 3ft. 1789. See Fig. 724. (A. H. iii. 128.)

E. McNabiana (McNab's).* *fl.* rosy-red, with a white limb; viscid, nearly 1½in. long, stoutest a little below the middle. May to July. *l.* short, thick, obtuse, awned, slightly spreading. Hybrid. (P. M. B. vii. 125.) The variety *rosea* has longer and more recurved leaves, and the flowers are bright rose in the tubes, veined with a deeper shade of the same colour, neck deep purple, and limb white.

E. mediterranea (Mediterranean). *fl.* axillary, racemose, secund, nodding; corolla red, with dark anthers, urceolate, one and a-half to two lines long. March to May. *l.* four or five in a whorl, linear-cuneated, glabrous. *h.* 4ft. to 6ft. Western Europe (Ireland). Hardy. (B. M. 471.)

E. melanthera (black-anthered).* *fl.* tinged with pink, with exserted black anthers. Autumn, winter. *l.* linear-obtuse, rather thick, glabrous, or slightly scabrid when young. *h.* 2ft. A compact-growing, floriferous species. (L. B. C. 867.)

E. metulæflora (ninepin-flowered). *fl.* terminal, umbellate; corolla red, with a pale border, salver-shaped, ventricose at the base. June to August. *l.* four to five in a whorl, linear, ciliated, spreadingly recurved. *h.* 1ft. to 2ft. 1798. (B. M. 612.)

FIG. 723. FLOWERING BRANCH OF ERICA HYBRIDA.

Erica—*continued.*

E. multiflora (many-flowered). *fl.* axillary, disposed in a racemose corymb; corolla pale red, with an urceolar or ovate bell-shaped tube, one and-a-half to two lines long; anthers black. October to February. *l.* four or five in a whorl, glabrous, linear. *h.* 2ft. France, 1731. Hardy. (Fl. Ment. 59.)

FIG. 724. FLOWERING BRANCH OF ERICA MASSONII.

E. mundula (neat). *fl.* terminal, usually in fours, sessile; corolla reddish-purple, salver-shaped, with a very short narrow tube, and a wide limb. October to February. *l.* four in a whorl, subulate, spreading, shining. *h.* 2ft. 1810. (A. H. vi. 273.)

E. mutabilis (changeable). *fl.* in terminal umbels; corolla tube bright red, ¾in. long, smooth. *l.* four in a whorl, linear-obtuse, hairy. *h.* 6in. 1798. (B. M. 2348.)

E. odorata (perfumed).* *fl.*, corolla white, campanulate, very fragrant. May to July. *l.* four in a whorl, glandularly ciliated. *h.* 1ft. 1829. (B. M. 1399.)

E. ovata (ovate). *fl.* terminal; corolla purplish-red, tubular, with a narrow throat, nearly 1½in. long, much inflated. May and June. *l.* three in a whorl, oblong, finely ciliated. *h.* 1ft. 1811. (L. B. C. 417.)

E. Parmentieriana (Parmentier's).* *fl.* terminal; corolla reddish-purple, with a cylindrically ventricose tube, and broad spreading segments. June to August. *l.* four in a whorl, linear, spreading. *h.* 1ft. 1810. (L. B. C. 197.) The variety *rosea* is a compact-growing form, with deep rosy-purple flowers, which are usually produced in fours from each lateral growth.

E. Paxtoniana (Paxton's). *fl.* in umbels of eight or ten; corolla shading to white, with a greenish-purple neck, tubular, stout, about 1in. long. *l.* linear-oblong, recurved, hairy. Hybrid.

E. persoluta (garland-flowered). *fl.* terminal; corolla small, campanulate, one and a-half lines long, with deep acute segments. April, May. *l.* four in a whorl, short, linear, glabrous. Branches downy or hairy. *h.* 1ft. 1774. (B. M. 342.) There are two varieties of this species: *alba* (flowers white), see Fig. 725; and *rosea* (flowers red).

E. perspicua (clear-flowered). *fl.* terminating the small branches, spike-formed; corolla reddish-purple, cylindrical, erect. April to June. *l.* linear, nearly smooth. *h.* 2ft. 1800. (A. H. v. 230.)

E. p. nana (dwarf).* *fl.*, corolla tube pinkish-white, 1in. long, slender; limb white. *l.* hairy.

E. physodes (puffed-out).* *fl.* terminal, four to six in a fascicle; corolla white, ovate-globose, clammy, three to four lines long. March to May. *l.* four to six in a whorl, spreading, viscid, slender. *h.* 1ft. to 2ft. 1788. (B. M. 443.)

Erica—*continued.*

E. primuloides (Cowslip-like).* *fl.* terminal, nearly sessile, fastigiate; corolla rosy-purple, with an ovate tube, and a broad spreading limb. May, June. *l.* five in a whorl, acerose. *h.* 1ft. 1802. SYN. *E. delecta*. (B. M. 1548.)

E. princeps (chief). *fl.* terminal, umbellate; corolla reddish-purple, viscid, with a ventricose tube, and a hairy top. May to July. *l.* four in a whorl, linear, ciliated, recurved. *h.* 1ft. to 2ft. 1800. (A. H. iii. 140.) The variety *carnea* has longer, flesh-coloured flowers, with a narrower tube.

E. propendens (propendent).* *fl.* terminal, solitary, or by threes; corolla purple or deep red, bell-shaped. July. *l.* four in a whorl, short, ciliated. Branches flexuous. *h.* 1ft. 1800. (B. M. 2140.) *E. p. tubiflora* is a handsome garden hybrid, with flowers rosy-purple at the base, and white in front; leaves clothed at the edges with white hairs.

E. pulverulenta (powdered). *fl.* terminal; corolla purplish-red, ovate. June to August. *l.* three in a whorl, acerose. Plant clothed with powdery down. *h.* 1ft. 1820. (P. M. B. xvi. 161.)

E. pyramidalis (pyramidal). *fl.* terminal, usually in threes; corolla purplish-red, funnel-shaped, with a spreading border, about four lines long. March. *l.* pubescent, spreading, acerose, six or more in a whorl. *h.* 1½ft. 1787. (A. H. iii. 142.)

E. ramentacea (scaly).* *fl.* terminal, umbellate; corolla purplish-red, with a spherical eight-angled tube, and a recurved erect limb. July to December. *l.* acerose, four in a whorl, glabrous. *h.* 1½ft. 1786. (A. H. iii. 143.)

E. regerminans (regerminating). *fl.* pedicellate, drooping, semi-lateral; corolla pale red, ovate-globular, small. May to August. *l.* linear, recurved, three in a whorl. *h.* 1½ft. 1791. (L. B. C. 1728.)

E. retorta (curled-back-leaved). *fl.* terminal, umbellate, usually seven or eight together; corolla pale red, viscid, with an ovate, ventricose tube, and acute segments, eight to nine lines long. June to August. *l.* four in a whorl, squarrosely recurved, and, as well as the calyces and bracts, fimbriately ciliated and

FIG. 725. FLOWERING BRANCH OF ERICA PERSOLUTA ALBA.

Erica—*continued.*

aristate. *h.* 1ft. 1781. (A. H. iii. 144.) *E. r. major* is a closer-growing form, with the corolla tubes stouter, pink, reddish-purple at the points, the lobes white. (B. M. 362.)

E. rubens (red). *fl.* terminal; corolla purplish-red, ovate-globose, small. July and August. *l.* acerose, four in a whorl, hispid, spreading. *h.* 1ft. 1798. (A. H. i. 43.)

FIG. 726. FLOWERING BRANCH OF ERICA RUBRO-CALYX.

E. rubro-calyx (red calyx).* *fl.* produced on the lateral growths, and disposed in dense spikes; corolla white, tubular; calyx reddish-purple. *l.* linear-lanceolate. Hybrid. See Fig. 726. (A. H. vi. 285.)

E. sanguinea (bloody). *fl.* terminal, corymbose; corolla blood-red, tubular, nearly 1in. long. *l.* linear, three in a whorl, with revolute ciliated margins. *h.* 1ft. to 2ft. 1799. (L. B. C. 86.)

E. Savileana (Savile's).* *fl.* red or purplish-red; peduncles loosely racemose, axillary; corolla globose-oblong. April to September. *l.* four in a whorl, linear, glabrous, erect. *h.* 1ft. 1800. (A. H. v. 238.

E. scabriuscula (roughish). *fl.* produced from the points of all the shoots; corolla white, campanulate. April, May. *l.* bluntly oblong, clothed with rough glandular hairs, as are also the stems and branches. *h.* 1ft. 1805. (L. B. C. 517.)

E. scoparia (broom).* *fl.* greenish, in long, unilateral racemes; calyx lobes ovate, about one-half of corolla; corolla sub-globose, as broad as long; anthers without appendage. *l.* in scattered whorls of three each. Branches glabrous. *h.* 2ft. to 3ft. South Europe. Hardy. (Fl. Ment. 59.)

E. Sebana (Seba's). *fl.* terminal, in threes; corolla pale brown; tube cylindrical, incurved, ventricose at the base; stamens much exserted. April to November. *l.* three or four in a whorl, recurvedly spreading. *h.* 2ft. 1774. (L. B. C. 23.) The following are three varieties of this species: *fusca*, flowers rich dark brown; *lutea*, flowers rich yellow; *rubra*, flowers rich reddish-brown.

E. Shannoniana (Lady Shannon's).* *fl.* terminal, umbellate, drooping; calyx coloured; corolla white, tinged with purple, with a ventricose ribbed tube, 1½in. long. June to September. *l.* three or four in a whorl, stiff, linear-lanceolate, spreading, each ending in a hair. *h.* 1ft. to 2ft. 1806. (B. M. 4069.)

E. speciosa (showy). *fl.* terminal, in threes; corolla dark red or reddish-purple, having a cylindrical, inflexed, curved tube, with a greenish-yellow mouth. June to September. *l.* linear, downy, spreading. *h.* 2ft. 1800. (A. H. iv. 192.)

E. Spenceriana (Spencer's). *fl.* dull purplish-lilac, tubular, 1in. long, tipped with white. Spring and summer. *l.* subulate, slightly spreading, smooth. Hybrid.

E. splendens (splendid). *fl.* densely crowded, drooping; corolla deep red, downy, with a sub-revolute limb. April to September. *l.* linear, obtuse, spreading. *h.* 2ft. 1792. (A. H. v. 240.)

E. stricta (upright). *fl.* terminal, umbellate; corolla three lines long, with an ovate urceolar tube, and reflexed segments. August to November. *l.* four in a whorl, obtuse, glabrous, bisulcate beneath. *h.* 2ft. to 3ft. South-western Europe, 1765. (A. E. ii. 134.)

E. suaveolens (sweet-scented). *fl.* terminal; corolla pale red, urceolate; anthers a little exserted, black. August. *l.* three in a whorl, oblong-lanceolate, ciliated. *h.* 1ft. 1800. (A. H. vi. 292.)

E. sulphurea (sulphur-coloured). *fl.* fasciculate, axillary and terminal, nearly sessile, horizontal; corolla cylindrical, trumpet-shaped, villous. June to October. *l.* linear, obtuse, villous. *h.* 2ft. 1805. (A. H. v. 241.)

E. taxifolia (Yew-leaved). *fl.* in terminal clusters; corolla bright pink (as is also the calyx), globose, erect. May, June. *l.* three in a whorl, smooth, spreading. *h.* 1ft. 1788. (A. H. ii. 93.)

E. Tetralix. Cross-leaved Heath. *fl.* capitate, terminal; corolla pale red, three lines long, ovate-globose, downy at top, outside. July to September. *l.* ciliated, four in a whorl. *h.* 6in. to 12in. Plant of a greyish hue. Europe (Britain). Hardy. (Sy. En. B. 889.)

E. Thunbergii (Thunberg's). *fl.* sub-terminal, umbellate; corolla reddish-orange colour at top, and greenish-yellow at the base, with a globose tube and a large limb. February to August. *l.* three in a whorl, linear, glabrous, glaucous. *h.* 1ft. 1794. (B. M. 1214.)

E. transparens (transparent). *fl.* large, crowded at the tops of the branches on every side, somewhat spicate; corolla six to seven lines long, tubular, bristly towards the apex outside. May. *l.* ovate-cuneated, shortly pectinate. *h.* 1½ft. 1800. (A. H. vi. 295.)

E. tricolor (three-coloured).* *fl.* terminal, usually about six together; corolla red at the base, white at top, but greenish-yellow about the contraction of the limb; viscid, with a large ventricose tube, and ovate-cordate, slightly crenulated segments. May to July. *l.* three in a whorl, linear, recurved, ciliated, as are also the bracts and calyces. *h.* 2ft. 1810. (P. M. B. vi. 3.)

FIG. 727. ERICA VESTITA COCCINEA, showing Flowering Branch and detached Single Flower.

E. t. flammea (flame). *fl.* about 1½in. long. *l.* bluntly-oblong, slightly recurved, awned; edges clothed with a profusion of hoary hairs.

E. t. inflata (inflated). *fl.* about 1in. long. *l.* erect, slightly spreading. Stems and branches densely clothed with hairy leaves.

Erica—*continued.*

E. t. rubra (red).* *fl.* about 1in. long, reddish-purple, shading off to white, with a green neck. *l.* closely set, slightly spreading, hairy.

E. t. speciosa (showy). *fl.* 1in. long, umbellate, slightly swollen below the rosy-red middle. *l.* linear-lanceolate, slightly spreading.

E. t. Wilsoni (Wilson's).* *fl.* 1½in. long, much inflated at the base, suddenly contracted at the neck. *l.* oblong-lanceolate, slightly spreading, profusely hairy.

E. triumphans (triumphant). *fl.* white, axillary; calyx large, inflated, angular; corolla ovate, inflated. June, July. *l.* three in a whorl, subulate, ciliated. *h.* 2ft. 1802. (L. B. C. 257.)

E. trossula (Spruce). *fl.* terminal; corolla with an open ventricose tube. May to July. *l.* four in a whorl, linear, glabrous. *h.* 1½ft. 1806.

E. vagans (wandering).* Cornish Heath. *fl.* axillary, racemose; corolla pale purplish-red, short, campanulate; pedicels usually twin. July to September. *l.* four or five in a whorl, acerose. *h.* 1ft. Western Europe (Cornwall). Hardy. (Sy. En. B. 893.)

E. ventricosa (ventricose). *fl.* disposed in terminal umbellate fascicles; corolla purplish-red, with a ventricose tube, waxy; style inclosed. April to September. *l.* four in a whorl, short, acerose, semi-cylindrical, and, as well as the calyces and bracts, ciliated. *h.* 1½ft. 1787. (B. M. 350.) Of this very handsome, compact, and free-branching Heath, there are numerous varieties.

E. v. alba (white). *fl.* china white, tubular, about 1in. long. *l.* with short white woolly hairs at the edges.

E. v. breviflora (short-flowered). *fl.* rosy-red, short, stout, thickest at the base.

E. v. carnea (flesh-coloured). *fl.* flesh-colour, 1in. long, slightly swollen at the base.

E. v. coccinea minor (lesser scarlet).* *fl.* white, slender, tubular; tubes ¾in. long; lobes of limb reflexed and bright red. (R. H. 1880, 50.)

E. v. fasciculata rosea (rosy-fascicled). *fl.* stout, 1in. long; tube bright rose, deep purple at the neck.

E. v. grandiflora (large-flowered).* *fl.* rosy-purple, stout, tubular, over 1in. in length. *l.* long, straight.

E. v. splendens (splendid). *fl.* numerous, nearly 1in. long, swollen in the middle; tubes white; neck and limb rosy-purple and white. *l.* long, linear, recurved, hairy.

E. v. tricolor (three-coloured).* *fl.* tubular, nearly 1in. long; tubes blush; neck carmine, reflexed; segments of limb white. *l.* linear, slightly reflexed.

E. verticillata (verticillate). *fl.* crowded, nearly terminal, verticillate, drooping; corolla scarlet, with a cylindrical inflated tube, glabrous, constricted at top. July to October. *l.* linear, glabrous. *h.* 3ft. 1774. (A. H. i. 48.)

E. vestita (clad).* *fl.* crowded, verticillate, nearly sessile, spreading; corolla white, cylindrical, more or less clavate, nine to eleven lines long, downy, with a revolute limb; calycine segments ciliated with glandular hairs. *l.* linear, erect, with scabrous edges. *h.* 3ft. 1789. The following are the more important forms:

E. v. alba (white).* *fl.* hardly 1in. in length, pure white; whorls ten to twenty-flowered. (A. H. iii. 147.)

E. v. coccinea (scarlet).* *fl.* deep rich red, about 1in. long, tubular, slightly curved. See Fig. 727. (A. H. iv. 199.)

E. v. incarnata (flesh-coloured). *fl.* delicate pink, more than 1in. long, in whorls of from ten to twenty. (A. H. ii. 97.)

E. v. rosea (rosy). *fl.* rosy-red, about 1in. long, in whorls of from twenty to thirty.

E. Victoria (Victoria).* *fl.* deep purple, with white segments, umbellate, flask-shaped, 1in. or more long. Summer. *l.* somewhat ovate, awned, with short stiff spines round the edges. Hybrid.

E. Westphalingia (Westphalian).* *fl.* rosy-red, tubular, 1in. long. Summer. *l.* linear-obtuse. Hybrid.

E. Wilmoreana (Wilmore's).* *fl.* produced upon the lateral growths, in spikes of from 1ft. to 1½ft. long; corolla bell-shaped, nearly ¾in. long. Spring. *l.* linear, covered with short white hairs, as are also the branches. Hybrid.

ERICACEÆ. An extensive order, widely spread over the whole world (but very rare in Australia), containing eighty-seven genera and about 1300 species. The species are, for the most part, shrubs or sub-shrubs, but occasionally growing into small trees. Flowers regular, or nearly so, hermaphrodite; calyx superior or inferior, of four or five divisions; corolla four or five-cleft, or toothed; stamens four, five, eight, or ten, or twice those numbers, hypogynous or epigynous. Fruit a capsule or berry. Leaves mostly evergreen, whorled, alternate or opposite, exstipulate. Well-known genera are: *Arbutus, Cassandra, Erica, Gaultheria, Pieris, Pyrola,* and *Rhododendron.*

ERICINELLA (a diminutive of *Erica*). ORD. *Ericaceæ.* A genus of four species of small-flowered, slender, bushy, erect, greenhouse evergreen shrubs, with a Heath-like appearance. They are natives of South Africa and the mountains of tropical Africa and Madagascar. Probably none have ever been introduced, except the following. For cultivation, *see* **Erica.**

E. Mannii (Mann's). *fl.* dull red, three or four together at the tops of the branchlets, on short, curved pedicels, nearly globose; corolla sub-globose, with four short, obtuse, ciliate lobes. July. *l.* quaternate, close-set, whorled in fours, linear, with revolute margins, glabrous. *h.* 4ft. to 10ft. Cameroon Mountains, 1866. (B. M. 5569.)

ERIGERON (from *Eriogron* (early old), the name given to a Composite by Theophrastus; species downy-hoary when young). Including *Phalacroloma* and *Polyactidium.* ORD. *Compositæ.* A genus comprising about a hundred species of hardy annuals, biennials, or perennials, resembling *Aster,* but having the ray-florets in several series. In Britain, it is represented by the perennial *E. alpinus,* a pretty rock plant found in the Breadalbane and Clova Mountains; the annual or biennial *E. acris*; and the annual *E. canadense,* a troublesome weed in some places. They are found everywhere in cold and mountainous regions, and are of very easy culture in common garden soil. Few species are worth growing. Those enumerated below form excellent subjects for mixed borders, in a somewhat moist, but well-drained situation. They may be readily increased by divisions or by seeds.

E. aurantiacus (golden).* *fl.-heads* about 2in. across, bright orange, solitary, on a stout, erect peduncle. *l.* oblong, entire; upper ones sessile, lanceolate. *h.* 1ft. Turkestan, 1879. Perennial. (Gn., Sept. 20, 1884.)

E. caucasicus (Caucasian). *fl.-heads* scarcely 1in. across, rosy-purple, borne in loose masses on stems nearly 2ft. high. Summer. *l.*, radical ones spathulate; cauline ones ligulate, stem-clasping. *h.* 1ft. Caucasus, 1821. Perennial.

E. glabellus (smooth-leaved). *fl.-heads* large, one to seven on the leafless summit of the stout stems; ray-florets very numerous, purple; disk yellow. June. *l.* nearly glabrous, except the margins, entire; the upper oblong-lanceolate and pointed, closely sessile or partly clasping; the lower spathulate, stalked. *h.* 6in to 18in. North United States. Perennial.

FIG. 728. ERIGERON GLAUCUS.

E. glaucus (glaucous).* *fl.-heads* purple, pretty. Summer and autumn. *l.* ciliated, glaucous, clammy; radical ones with winged stalks; cauline ones sessile, entire. *h.* 6in. to 12in. Western North America, 1812. Perennial. See Fig. 728. (B. R. 10.)

E. grandiflorus (large-flowered).* *fl.-heads* purple or whitish, comparatively large, solitary. Late summer. *l.*, radical ones obovate-spathulate; cauline ones oblong to lanceolate. *h.* 4in. to 8in. Rocky Mountains, 1819. Perennial.

E. multiradiatus (many-rayed).* *fl.-heads* terminal, solitary, about 2in. across, surrounded by numerous overlapping linear leaves; ray-florets purplish; disk yellow. Summer. *l.* oblong, toothed, tapering into a long stalk. *h.* 6in. to 2ft. Himalaya, 1880. (B. M. 6530.)

E. Roylei (Royle's).* *fl.-heads* 2in. across, disposed in a loose corymb; ray-florets bluish-purple; disk yellow. Summer. *l.* oblong-spathulate, smooth, ciliated. *h.* 4in. to 8in. Himalayas.

E. speciosus (showy).* *fl.-heads* large, handsome, corymbose; ray-florets violet, exceedingly narrow; those of the disk

Erigeron—*continued.*

yellow; peduncles single-flowered; involucre hemispherical. Summer and autumn. *l.* sessile, oblong, acute, entire, ciliated at the margin, the rest glabrous, dark green, marked with nerves, which commence near the base and run upwards, nearly parallel with the midrib; radical ones spathulate, tapering into long slender stalks. Stem herbaceous, 1½ft. high, rounded, striated, glabrous, erect, and branched upwards in a corymbose manner. Western North America. Perennial. (B. M. 3606, and B. R. 1577, under name of *Stenactis speciosa.*)

ERINOSMA. *See* **Leucoium.**

ERINUS (*Erinos*, a plant mentioned by Dioscorides). ORD. *Scrophularineæ.* A very pretty tufted alpine plant, suitable for growing (in dwarf positions) on well-drained rockwork, amongst stony or gritty peat and loam, or on brick walls, in which situations it is easily established by sowing the seed in earthy holes and crevices. When the plants are developed, the seeds become self-sown, and the produce from these withstand the winter best. It may also be propagated by division.

E. alpinus (alpine).* *fl.* purple, alternate; racemes simple, terminal, sub-corymbose. March to June. *l.* tufted, spathulate, deeply serrated, hairy. *h.* 5in. to 6in. Mountains of Western Europe (naturalised here and there in Britain), 1739. (B. M. 310.) There is also a white-flowered variety.

ERIOBOTRYA. Included under **Photinia** (which *see*).

ERIOCALIA MAJOR. *See* **Actinotus Helianthi.**

ERIOCAULON (from *erion*, wool, and *kaulos*, a stem; in allusion to the woolly scapes of some of the species). Pipewort. SYN. *Randalia.* ORD. *Eriocauloneæ.* A genus of about a hundred species of aquatic or marsh plants, widely distributed over the globe. None are in cultivation except in botanic gardens. The only Eu opean representative of the genus is *E. septangulare*, an inconspicuous plant, which, in the Old World, is only found in lakes in Skye and the West of Ireland.

ERIOCAULONEÆ. A natural order of marsh plants, having minute flowers and principally radical leaves. They are, for the most part, natives of South America. The typical genus is *Eriocaulon.* There are six genera and 325 species.

ERIOCHILUS (from *erion*, wool, and *cheilos*, a lip; referring to the disk of the labellum or lip being pubescent). ORD. *Orchideæ.* A genus of five species of pretty greenhouse terrestrial orchids, from Australia. They thrive in a compost of light turfy loam, peat, and sand, in equal proportions, and may be increased by division of the roots.

E. autumnalis (autumnal). *fl.* pink, solitary, or two or three rather distant; labellum about half as long as the la'eral sepals, with an erect, concave, narrow claw. October. *l.* radical, ovate, acute, usually dying away before the time of flowering. *h.* 6in. 1823. A slender plant. SYN. *Epipactis cucullata.* (H. F. T. 120.)

E. dilatatus (dilated). *fl.* resembling those of *E. autumnalis*, one or two, rarely three; lip much shorter, the claw erect, with slightly prominent rounded lateral lobes. May. *l.* linear-lanceolate, sessile, and stem-clasping. *h.* 6in. to 12in. There are one or two varieties of this species.

E. multiflorus (many-flowered). This closely resembles *E. dilatatus*, of which it is probably only a variety. The habit and foliage are the same, but the flowers are more numerous and rather smaller. March.

E. scaber (rough). *fl.* pink one to three; sepals and petals rather shorter and broader than in *E. autumnalis*, but otherwise with the same proportions; labellum claw distinctly produced into small, erect, rounded lateral lobes. September. *l.* radical, ovate or cordate, usually persisting at the base of the flowering stem. Closely allied to *E. autumnalis.*

ERIOCNEMA (from *erion*, wool, and *kneme*, a leg; alluding to the hairy stalks). ORD. *Melastomaceæ.* A genus containing a couple of species of stove herbaceous plants, natives of South Brazil. Flowers white, small, few, in umbels at the end of a naked stalk. Leaves oval, heart-shaped at the base, and clothed with rusty hairs. For culture, *see* **Bertolonia.**

E. fulvum (reddish-yellow). *fl.* pink. June. *h.* 6in. 1850.

Eriocnema—*continued.*

E. marmoratum (marbled). *fl.* rose. May. *l.* beautifully variegated. *h.* 4in. 1850. (L. & P. F. G. i. 27.)

ERIOCOMA. *See* **Montanoa.**

ERIODENDRON (from *erion*, wool, and *dendron*, a tree; alluding to the capsule being filled with a fine woolly substance). ORD. *Malvaceæ.* A genus of about eight species of very fine stove evergreen trees, with spongy wood. One species is found in the Old World; the rest are tropical American. Flowers large, singly or in clusters from the sides or tops of the branches. Leaves palmate. They thrive best in a rich loamy soil; and should be raised from seeds, sown in a sandy soil, in heat.

E. anfractuosum (curled). *fl.* clothed with silky wool on the outside and yellowish on the inside. *l.*, leaflets five, seven, or eight, entire, or serrulated above, lanceolate, cuspidate. Trunk usually prickly. *h.* 100ft. West Indies, 1739.

E. a. Caribæum (Caribean). *fl.* conspicuous, handsome, and with a delightful, but evanescent fragrance, either solitary or two or three together in a short kind of panicle, for the most part axillary towards the ends of the branches; petals five, of a pale primrose or cream colour, with the part a little above their base of a deep purplish-red, spreading in streaks towards their middle. *l.* palmate, deciduous; leaflets from five to seven, oblong-lanceolate, acuminate, smooth and shining above, opaque and paler, with a faint bluish tinge beneath; midrib yellow, prominent. West Indies. Plant smooth, except the flower. An extremely elegant, but at the same time curious-looking, high tree. (B. M. 3360.)

E. leiantherum (smooth-flowered). *fl.* white, sub-terminal and lateral at the tops of the branches, large, woolly on the outside. *l.*, leaflets five to seven, ovate, cuspidate, quite entire. *h.* 70ft. Brazil, 1818.

ERIOGONUM (from *erion*, wool, and *gonu*, a joint; joints of the stems downy). ORD. *Polygonaceæ.* A genus of rather pretty summer-flowering hardy annuals and herbaceous or somewhat woody perennials. There are about 100 species, natives of North-western America. Flowers perfect, involucrate; stamens nine, upon the base of the perianth. Leaves radical, alternate or verticillate, entire, without stipules. They thrive in a loamy-peat soil, and may be increased by division or seed.

E. compositum (compound). *fl.* dull white or rose-coloured; *l.* stalked, densely tomentose beneath, greener above, oblong-ovate, cordate at base; peduncles erect, stout, 6in. to 18in. high, nearly glabrous. Perennial. (B. R. 1774.)

E. corymbosum (corymbose). *fl.* white to deep rose, rarely yellow. *l.* ovate to oblong-lanceolate; umbel stiff, broadly cymose; involucres mostly sessile. *h.* 1ft. Perennial.

E. stellatum (starred). *fl.* yellow, frequently in loose compound umbels. *l.* two or three, arising from the scape, exactly resembling those of *Statice oleifolia*, slightly downy, and only so beneath. *h.* 6in. to 12in. Interior of North-west America. (H. F. B. A. ii. 177.)

E. umbellatum (umbellate). *fl.* yellow. *l.* obovate to oblong-spathulate or oblanceolate, more or less tomentose, especially beneath. *h.* 3in. to 12in.

ERIOPHORUM (from *erion*, wool, and *phoreo*, to bear; in reference to the cottony heads). Cotton Grass. ORD. *Cyperaceæ.* A genus (confined to North temperate and Arctic regions) of about a dozen species of pretty bog plants, closely allied to *Scirpus*, but differing from it in that the hypogynous bristles, as the flowering advances, protrude to a great length beyond the spikelets, forming silky-cottony tufts, whence the common name. They can be naturalised with great success by the margins of ponds, &c., or in the boggy spots of the wild garden.

E. alpinum (alpine). This plant resembles *Scirpus cæspitosus*, with the exception of having long bristles. Northern hemisphere (probably now extinct in Britain).

E. vaginatum (sheathed). *fl.*, spikelet solitary, terminal, ovoid, six to eight lines long, deep olive-green; hypogynous bristles numerous to each flower, forming cottony tufts, nearly globular. Stems tufted, 1ft. high, or more, covered at the base with a few loose ragged sheaths, one of which bears linear, almost subulate leaves. Northern hemisphere (Britain, but especially abundant in Scotland and Ireland).

ERIOPHYLLUM (from *erion*, wool, and *phyllon*, a leaf; woolly-leaved). ORD. *Compositæ.* A genus of about a dozen species of mostly floccose herbs, rarely

Eriophyllum—*continued.*

suffruticose (from Western North America), merged into *Bahia* by Bentham and Hooker.

E. cæspitosum (B. R. 1137), perhaps the only species in cultivation, is identical with **Bahia lanata** (which *see*) and *Actinella lanata*.

ERIOPSIS (from *Eria*, and *opsis*, like; resemblance). ORD. *Orchideæ*. A genus of three or four species of very ornamental cool-house epiphytal orchids, natives of Northern Brazil, Guiana, and Columbia. A copious supply of water when growing, full exposure to the sun, and a compost of fresh peat and living sphagnum, are essential. They require the temperature of an intermediate house, such as suits Cattleyas, &c. Increased by dividing the pseudo-bulbs.

E. biloba (two-lobed). *fl.* about 1in. across; sepals and petals oblong, dark yellow, shaded round their margins with brown; lip three-lobed, white, spotted with dark brown; spike 1ft. to 1½ft. long, curved or drooping. *l.* broad-lanceolate, borne in twos or threes at the apices of the pseudo-bulbs. Pseudo-bulbs 5in. to 8in. high, conical, dark brown. Native country unknown. 1845.

E. rutidobulbon (rough-bulbed). A species similar to *E. biloba*, but with larger and more deeply-coloured flowers. New Grenada, 1847. (B. M. 4437.)

ERIOSEMA (from *erion*, wool, and *sema*, a standard; vexillum clothed with silky hairs). ORD. *Lèguminosæ*. A genus of about forty species of stove herbaceous plants and shrubs, most abundant in South America and tropical and South Africa. One species has a wide range in Asia and Australia. Flowers yellow or violet; racemes or fascicles axillary. Leaves digitately trifoliolate. The two best species are described below. They thrive in a compost of peat and loam. Propagated by seeds or cuttings.

E. grandiflorum (large-flowered). *fl.*, racemes terminal and axillary, panicled; corollas covered with soft pubescence on both surfaces. October. *l.*, leaflets oblong-elliptic, mucronate; petioles very short, and, as well as the nerves and veins on the under surface of the leaves, clothed with silky rufous down. Branches angular. *h.* 1ft. to 2ft. North Mexico.

E. violaceum (violaceous). *fl.* violaceous; racemes axillary and terminal, many-flowered. July and August. *l.*, leaflets three, oblong-linear, acute, greenish above and velvety, but clothed with rusty hairs beneath. *h.* 4ft. Tropical South America and Trinidad, 1820.

ERIOSPERMUM (from *erion*, wool, and *sperma*, seed; referring to the woolly envelope of the seeds). ORD. *Liliaceæ*. A genus of about twenty-five species of pretty greenhouse bulbous plants, from tropical and Southern Africa. For culture, *see* **Bulbine.**

E. Bellendeni (Bellenden's). *fl.* light blue. June to August. *l.* roundish, acuminate, cucullate at base. *h.* 1ft. Cape of Good Hope, 1800. (B. M. 1382, under name of *E. latifolium*.)

E. Mackenii (McKen's). *fl.* bright golden-yellow, jointed on the pedicel; scapes slender, cylindric, glabrous. July. *l.* ovate-oblong, obtuse, or sub-acute, quite glabrous, rather fleshy, smooth, nerveless. Natal, 1871. (B. M. 5955, under name of *Bulbine Mackenii*.)

E. proliferum (proliferous). *fl.* white, green. June to August. *l.* proliferous; leaflets filiform, undivided, sessile. *h.* 9in. Cape of Good Hope, 1821.

E. pubescens (downy). *fl.* white, green. June. *l.* sub-cordate, acute, cucullate, pubescent. *h.* 1ft. Cape of Good Hope, 1820. (B. R. 578.)

ERIOSTEMON (from *erion*, wool, and *stemon*, a stamen; stamens woolly). ORD. *Rutaceæ*. A genus of very handsome greenhouse evergreen shrubs. There are about thirty species, all (with the exception of a single species from New Caledonia) natives of extra-tropical Australia. Peduncles axillary, one-flowered, covered with imbricate bracts, or furnished with opposite or whorled ones in the middle. Leaves alternate, entire, simple, full of pellucid dots. Eriostemons are among the most useful and beautiful of Australian hard-wooded plants whose flowering season is winter and early spring. All the species are well worth attention, the flowers being freely produced when the plants are healthy and well ripened. They are either white or pale pink, and last a long time in good condition, if kept in a cool temperature. Propagation may be effected by cuttings, inserted in sandy peat, early in spring, covered with a bell glass,

Eriostemon—*continued.*

and placed in a gentle heat. When rooted, they should be hardened and potted off singly, to be transferred to larger sizes afterwards very gradually. The mode of propagation adopted by nurserymen on a large scale, is that of grafting, using for the purpose small stocks of *Correa*. This is a quick, and, as practised by them, a tolerably certain method. It is best for small growers to purchase such plants, as, by good culture, they soon form fine decorative subjects. Fibry peat, not broken too finely, with the addition of a little loam and silver sand, is a suitable compost. The soil should be rammed tolerably firm, care being taken not to bury the stem of the plant. Eriostemons succeed under the same treatment during the summer as many other Australian plants, namely, keeping a little close while the growth is being made, afterwards admitting more air, and finally placing outside, in a sunny position, from July until the end of September, in order to insure thorough ripening. The plants naturally form bush specimens, but may be trained as pyramids if desired. But little pruning, beyond shortening a few of the long growths, to induce a symmetrical habit, is necessary. In the case of large plants, whose flowers are used for cutting—a purpose for which they are well adapted—sufficient pruning may be performed simply by the removal of the longest flowering shoots. Efficient drainage and careful watering are at all times essential points towards success in cultivation. Eriostemons will flower earlier in winter if introduced into a temperature of about 55deg., but are quite as healthy and floriferous later on, if kept in a house from which frost is merely excluded. If old plants get out of health, it is advisable to prune back hard in spring, reduce the balls, and place them amongst new soil, in pots of a smaller size.

E. buxifolius (Box-leaved).* *fl.* pink or rose-coloured, axillary, almost sessile. April to June. *l.* small, cordate-ovate, or obovate, usually mucronate, with prominent glands. Branches round, pubescent. *h.* 1ft. to 2ft. 1822. (B. M. 4101.)

E. intermedius (intermediate).* *fl.* white, suffused with rosy-pink, large, solitary, axillary. April. *l.* obovate. *h.* 3ft. (B. M. 4439.)

E. myoporoides (Myoporum-like).* *fl.* rose-coloured; peduncles axillary, trifid, three-flowered. Early spring. *l.* linear-lanceolate, quite entire, smooth, glandular, mucronate. *h.* 1ft. to 2ft. 1824. (B. M. 3180.)

E. neriifolius (Nerium-leaved).* *fl.* rose-coloured or pink; peduncles axillary, three-flowered. April. *l.* lanceolate, rather wrinkled, mucronate. *h.* 3ft. 1847.

E. salicifolius (Willow-leaved). *fl.* pink, axillary, almost sessile, solitary. July. *l.* linear-lanceolate, entire, smooth. Branches triquetrous. *h.* 2ft. to 3ft. 1822. (B. M. 2854.)

E. scaber (rough).* *fl.* white, tinged with pink, rather small; peduncles short. March to June. *l.* linear, entire, dark green, mucronate, glandular. *h.* 1½ft. 1840. (P. M. B. xiii. 127.)

ERIPHIA. *See* **Besleria.**

ERITHALIS (from *Erithales*, a plant mentioned by Pliny; the Greek word means very luxuriant). ORD. *Rubiaceæ*. A genus of about five species of stove evergreen shrubs, natives of Florida and the West Indian Islands. They thrive in sandy fibrous loam, to which a little peat may be added. Cuttings of ripened side shoots will root in sandy soil, during the spring or summer, if placed under a hand glass, in heat.

E. fruticosa (shrubby). *fl.* white, small, sweet-scented; peduncles axillary, panicled. July. *l.* petiolate, obovate, or spathulate-lanceolate; stipules broad, short, mucronate, sheathing, permanent. *h.* 10ft. to 15ft. Jamaica, 1793.

ERITRICHIUM (from *erion*, wool, and *thrix*, *trichos*, hair; plants woolly). ORD. *Borragineæ*. A rather large genus of handsome dwarf annual or perennial herbaceous plants, widely dispersed throughout the temperate regions of the Northern hemisphere; a few come from South Africa and Australia. The species here given is the one most generally known. Like many other beautiful plants which grow at considerable elevations, it is difficult to keep alive long; it requires a thoroughly well-drained